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THE ORGANIZATION OF MASS BOMBING ATTACKS

By Air Chief Marshal Sir Arthur Harris, K.C.B., O.B.E., A.F.C.

THE organization of a mass attack by Bomber Command of the R.A.F. is never a mechanical or repetitive task. Each attack is a battle of wits against a vast and highly-organized army of technicians, and it is invariably planned with reference to the particular circumstances of the night or day—circumstances which are most unlikely to repeat themselves on any future occasion. This is true of the strategic bombing of German industrial cities: changes of weather or new technical devices which lead at once to a revolution in tactics will make one air battle over a German city totally different from another. The Battle of Hamburg, fought during a week of ideal bombing weather and against a night fighter force which had been temporarily disorganized, had very little resemblance to the Battle of Berlin, the first major assault to be carried out in the invariably unfavourable weather of the winter months and one which had to be made in the face of a reorganized and reinforced air defence. Range, weather, the relative as well as the absolute strengths of the opposed forces, and the nature of the target were entirely different in the two battles.

The difference between one attack and another became even more obvious when we had to divert some of our effort from the long term strategic bombing of German industries to the more immediate strategic aim of destroying the enemy's defences against the invasion of France. However different the other factors might be, the targets attacked in 1943 usually had in common that they were both large, fully built-up areas. In the Winter and Spring of 1944, as the first stage of the Battle of Berlin was drawing to a close, Bomber Command had to reorganize its method of attack in order to accomplish the destruction of targets, such as railway yards, ammunition dumps, or military depots, covering only a comparatively few acres. Later still, as the day of invasion approached, the objectives became as small as a battery of four guns or a row of wireless masts—units in the German defensive system which it was vitally important to put out of action during the critical hours of the landing. The flexibility of our organization had never before been so thoroughly tested, especially when it is remembered that at the same time it was necessary to continue the strategic bombing of large industrial areas in Germany to prevent the recovery of essential war industries. On one night Bomber Command would be dropping two or three thousand tons of high explosives on a variety of small but vital targets in France, and on the next night the 800 acres of Krupps,

together with other areas in Essen, would be attacked by the same force carrying the same weight of high explosives and incendiaries.

In general, organization has followed experience in battle; it has not been our practice to work out a system of attack without testing its efficiency, usually on a small scale, on actual operations. In 1941 new equipment was developed which, it was clear, would enable the timing of our attacks to be far more accurate than before: it would now be possible to make sure that each squadron of bombers reached a given point over enemy territory at a given time which could be decided to within a minute or two. In consequence the attack could be far more concentrated in time, and as a result in space, than ever before. This equipment was first tested in a few aircraft flying over Germany, and when the result of the test was known it was decided not to use it again until a considerable striking force could be equipped with it. Then, in the Spring of 1942, the first "saturation" attacks were planned on a scale which was large for that time. The arrival of each single aircraft over the target was detailed to the minute and the aim was to get the whole force over the objective in the shortest possible time. From the small scale tests in 1941 there sprung the major attacks of 1943—far heavier than 1,000 bomber attacks of 1942—which swamped the passive defences by raising hundreds of fires in a few minutes and the active defences by preventing them from concentrating on single bombers one after the other.

The shorter the attack, it has been found, the longer the work of planning. But plans cannot be worked out in detail long in advance and at leisure for an attack in hypothetical weather. As soon as we know the weather forecast for the night, usually early on the previous morning, the target is decided, and then follows a period of intensive work by my staff officers. They fix the heights at which the various types of aircraft are to fly, time the arrival of a thousand aircraft over the target at the right moment, as decided by the weather and other factors, plan the route or routes, and arrange the phases of the attack to ensure that there are no collisions among the crowded aircraft and that the bombs from one aircraft do not fall on another flying at a lower height. Moreover, it is not only over the target that, by careful planning, the aircraft must be kept together; if any of the bombers should straggle at any stage of the route there and back over enemy territory the risk from fighters or flak would be greatly increased. The marshalling of a thousand bombers with such precision during the whole of a journey of more than a thousand miles, in darkness throughout, and often in or over cloud, requires not only extremely detailed organization but also a thorough understanding of advanced scientific techniques. As the offensive has continued it has been found more and more necessary to centralize the planning of operations. At the beginning of the War it could often be left to each bomber group to choose its own route and time over the target within certain limits, but now this would lead to hopeless confusion; the place of each bomber squadron throughout the operation must be decided by staff officers who see the great and intricate plan as a whole. It must also be remembered that each decision about the route, the timing, or any other detail must be made not only in such a way that one piece of the puzzle fits in with all the others; the enemy is there also and his presence forces on us an intricate balance of mutually incompatible advantages. The route, for example, must always be a compromise—a balance of three main principles: it must be as direct as possible; it must avoid defended areas; and it must deceive the enemy so that he does not know where the bombers are going as soon as they reach his coast or what course they will follow as soon as they have attacked the target.

Just as the mass attacks on German industrial cities were planned and organized after various techniques of navigation and bombing had been tried out by small numbers of aircraft in actual operations, so the tactics of Bomber Command's attacks on the German Army's communications, supplies, and defensive works in France were developed from the experience of a small number of crews who attacked German aircraft factories in France in the Winter of 1943–44. In 1943 the growth of the United States Air Force, equipped with heavy bombers designed for daylight work, enabled Bomber Command to neglect the bombing of individual factories, which the Americans did extremely well, and concentrate on the chief industrial areas in Germany. But when the invasion of France was impending both the Allied bomber forces would be needed to take part in the vast task of disorganizing the whole railway system of Northern France and opening a way through the Atlantic Wall. Moreover, there was an urgent need for the enormous weight of bombs which the Lancasters and Halifaxes of the R.A.F. alone could carry —the bomb loads would, of course, be even heavier on short range attacks on French targets than they had been in attacks on distant objectives in Germany. The striking force, therefore, had to learn a wholly new technique. Immediately after the Battle of Berlin, the most difficult and highly specialized of all the Command's attacks on large industrial areas, the crews had to learn how to get an equal weight of bombs by night into an area one hundredth, or even less, the size of its normal targets. And this had to be done in good or bad weather, if the pre-invasion bombing was to reach the necessary intensity.

The problem, it was clear, could only be solved by exercising an even more rigid control of each stage of the attack, from the first placing of target indicators on the small target to the dropping of the last bombs, than had been used in bombing German industrial areas. At the same time new methods of marking the targets had to be devised—obviously a system of marking an area of some square miles would be of little use as a pointer to a single building. It was the task of a few Lancaster crews last Winter, while the main force was still engaged in the attack on Berlin, to develop and improve methods already in existence in a whole series of attacks on factories working for the Germans in France. The 12,000 lb. bomb, essentially a weapon for the precision bombing of small targets, was often used and the attacks were uniformly successful. In one instance the Lancasters succeeded in demolishing a small but very important needle-bearing factory consisting of only two buildings, many hundreds of miles from the French coast, and at a time when it was almost entirely hidden in cloud. The technique was obviously suited to the work and at the beginning of March it had been developed to the point where it could be used by hundreds of aircraft.

A thousand or more tons of high explosive bombs were therefore dropped on one railway marshalling yard after another, ploughing up the whole area of the yard, destroying masses of rolling stock, railway tracks, railway repair shops, locomotive sheds and facilities of all kinds ; so that by 6th June the French railways were hopelessly disorganized and reinforcements struggling towards Normandy in the ensuing weeks, with more Lancasters and Halifaxes bombing the lines ahead of them, were delayed and disorganized and seldom reached the battlefield with their full equipment, or received adequate supplies thereafter.

Finally, in the last few weeks before the Invasion, the Command was given the task of demolishing really small but absolutely vital targets, like coastal gun positions or wireless masts. Here, again, a controlled attack by hundreds of aircraft each carrying five, six or more tons of bombs proved the right method of hitting such

extremely difficult targets; the bombs were dropped in an area about the size of a field and the law of averages ensured direct hits on the super-heavy coastal guns emplaced there. On the night before the invasion a thousand four-engined bombers dropped 5,500 tons of bombs and silenced or disorganized the fire of all the ten permanent heavy coastal batteries in the area chosen for landing.

While these new methods of night attack were being developed and used, Bomber Command did not fail to sustain the offensive against industries inside Germany. Very large and vital areas of Frankfurt, for example, were devastated this Spring, and another heavy blow at Krupps of Essen destroyed all the repairs that had been made since the plant was first put out of action in 1943. The strategic bombing of German industries, which has so greatly weakened the German armies on all fronts, continued while all the preparations were being made for the final offensive on all fronts. It will continue to the end.

TRENCH-GASCOIGNE PRIZE ESSAY, 1943[1]

By LIEUTENANT-COMMANDER G. M. BENNETT, D.S.C., R.N.

SUBJECT

"Is compulsory training in National Defence desirable for the youth of this country after the War? If so, in what form should it be given; can use be made of any existing youth organizations; how is it to be associated with education, and between what ages should it take place?"

PRESIDENT ROOSEVELT has aptly described the ideals for which the United Nations are fighting the present war as the Four Freedoms. One of these is Freedom from Want, which we in Britain usually refer to rather less picturesquely as social security. Those who before the War had even a superficial idea of the life of several millions of our people in the slums and distressed areas or of the dire effects of continued unemployment upon them cannot doubt that there is a real need for providing improved social security in some form in Britain after the final victory. But the nation-wide interest shown in the Beveridge report—a magnificent if not entirely practicable attempt to solve the problem—disclosed one important, and to the future of our country perhaps vital point which seems to have passed unnoticed. Freedom from Want is dependent on another of the Four Freedoms—Freedom from Fear: without security against war all social security will sooner or later be of little value. The Beveridge report made clear that to implement any adequate scheme of this nature would involve a heavy charge upon the national exchequer; yet both Press and Parliament clamoured for its full and almost immediate implementation without apparently a glance at the fact that there must after the War be a prior claim on our financial resources which will be materially heavier than before 1939. Our defence forces and all their ancilliaries must be maintained at an adequate strength to provide the nation with reasonable insurance against another and possibly more disastrous war.[2]

The publication of the Beveridge report, in addition to showing the extent to which the country has become social-security minded, also revealed that, in spite of the dire disasters which have befallen us as a result of our failure to be ready for this war, the British people are still ignorant of the necessity for providing the means for avoiding a repetition of such national ineptitude in the future.

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[1] The Essay, written by Major-General H. Rowan-Robinson, C.B., C.M.G., D.S.O., which tied with this for the first Trench-Gascoigne Prize in the 1943 Competition, was published in last quarter's JOURNAL (May, 1944).

[2] A refreshing exception to the apparent general neglect of this important point was the letter from Sir Duncan Swann printed in *The Daily Telegraph*, dated 11th March, 1943:—

"Surely in our post-war Budgets priority over Social Security must be given to the—

National Debt.
Army, Navy and Air Force.
Civil Services.

We shall do well if we manage to maintain our Social Services at their 1939 standard."

SECURITY AGAINST WAR

In spite of our experience in the war of 1914–18 we failed in the twenty years which followed to prevent the outbreak of a greater conflict in 1939. This failure can be traced to our policy of almost blind trust in the League of Nations as an adequate instrument for ensuring peace: our belief that it could in the present state of development of the human mind achieve its aim without force to back its decisions; that we could, in consequence, reduce the strength of our armed forces far below that which would otherwise have been considered vital for security, let alone the armed strength without which diplomacy is largely impotent. Ostrich-like, we as a people were content to put the cart before the horse in a way equivalent to the abolition of civil police forces before mankind has learnt to practise in its widest interpretation the second great Commandment. In the economic blizzard which swept the world in those years of uneasy peace we were content to devote our limited resources to the development of our social services, neglecting their essential foundation—security against war. Well has the period 1919 to 1939 been called "the Long Week-end." "Whatsoever a man soweth, that shall he also reap"—but what a bloody harvest!

After this war, whilst endeavouring to develop a greater and more effective international system of security, of which the League of Nations was and is a valuable start, we must for a great many years maintain *adequate* armed forces. The precise strength of these does not fall within the scope of this paper; it is, however, clear that their annual cost will be heavy. The scale of modern war has evolved to such an extent that a nation can only prosecute it effectively by utilizing its entire resources. Every available man and woman must be utilized either in the armed forces or in the essential works and services needed to keep them supplied and to maintain the bare life of the country. The upkeep of armed forces on such a scale in time of peace is impracticable for many reasons, not the least being the unacceptable disruption of the economic life of the country. Forces of a certain size only can be maintained in peace, but both for war *and as a precaution against it* their potential size must *effectively* be much greater, in fact the maximum of which the nation is capable. Fundamentally this means ability to mobilize the man and woman power of the nation for war with as little delay as possible. Provision of the necessary fighting equipment apart, this can only be done as far as the armed forces are concerned without a delay which may prove disastrous, if our men and women have already received the necessary preliminary training. The continued existence of our nation, unless we are still to pursue the policy of muddling through which invites war and may one day prove finally disastrous, demands that our people shall realize firstly the need for maintaining our defence forces at an adequate strength in peace, secondly that as an essential part of the potential strength of those forces the people as a whole must be partially trained ready, should war come, for immediate and fully effective mobilization; and finally that the cost of our national defences must, in peace as well as in war, form the first charge on the Exchequer. Out of the security against war which will thus be afforded will come that prosperity which in the end will give the adequate social security desired by all.

A democratic nation will only maintain adequate defences in time of peace if it is convinced of their necessity. The British people will only accept compulsory training in National Defence in time of peace if it is *sure* that it is required. Such convictions cannot be rammed down their throats; only through a wise policy of national education will they become a strong and vital reality. At the same time

it must be remembered that no education can be effective whilst the spectre of want remains. Progressive steps to provide social security must go hand in hand with the development of the national conscience in the always important matter of defence. But, however essential compulsory training in National Defence may be, it cannot be ethically justified if its only object is to train the nation for war. Just as Britain must, whilst maintaining her armed forces at adequate strength after this war, simultaneously take the lead in setting up an international system of security designed to avoid war, so must the period allocated to compulsory military training have the second and ultimately greater object of developing within the nation that vital spirit of *service* which is the core of the second great Commandment and for lack of which all our internal ills may directly or indirectly be traced.

EDUCATION

Education may be, broadly, divided into three parts, though there is no clear dividing line between them: the acquisition of knowledge; the development of character; and training in citizenship. The first has always featured in education; the second has been an important characteristic in the education of our upper classes but sadly neglected in the remainder; the need for the third has only been appreciated in recent years, and is far from being catered for adequately.

The acquisition of knowledge falls naturally into three stages. A child must be first taught the fundamentals—the three R's, which are the " tools of the trade." Started at the age of five, this should be completed by the tenth birthday. General academic education follows. This does not take full effect until the age of ten, though it may be started earlier, and it cannot be satisfactorily completed before the sixteenth birthday. It consists of the attainment of a general knowledge of a varied collection of subjects without which no man or woman can effectively take his or her place in the modern world, coupled with the development of the mind to that state in which it is capable of learning for itself. The final stage is the acquisition of the specialist knowledge necessary to carry out the particular work which the individual has selected as his or her job in life. This can only be started earlier than the age of sixteen to the detriment of an adequate general education. The upper age limit cannot be clearly defined since so much depends upon the particular job concerned; but it lies between the ages of twenty and twenty-five.

The ingredients of character are many—endurance, courage, humility, generosity, loyalty—to name but a few. Since man lives not alone but in a society, the development of character in the modern world amounts to learning to subordinate (but not submerge) the selfish characteristics which are bestowed upon the individual by his Maker to the needs of others and the dictates of society for the mutual benefit of mankind. This development starts in the home as soon as a child can walk; it is fulfilled at about the twenty-fifth birthday. It is largely attained by a combination of example and discipline.[3] Initially it is in the hands of the parents, but as the years go by this influence progressively diminishes: example is always there but effective discipline, unless unreasonably harsh, is not, largely due to the complicated correlated effects of the natural strong affection which exists between parent and child. But if the influence of home life is steadily reduced, the opposite is true of the outside world. From the time the child is first allowed out of the house by itself the development of its character is influenced to a progressively greater

[3] It also includes spiritual education, but detailed consideration of this is outside the scope of this paper.

degree by those with whom it associates. That influence will only be good if it is compounded of three things: the example of those who are older and whose character is already correctly developed; the firm but just discipline essential to the smooth running of any human organization; and the often powerful effect on any community whereby the individual is led to conform in essentials to the ways of the majority simply by the fact that if it does not it is treated by its equals as an outcast.

Citizenship involves subordination of the desires of the individual to his duties as a member of society; perhaps better described as service to others before self-interest. It implies a knowledge of such matters as economics, political government, public services and national defence, together with an unselfish will to play a part in all of them. To a limited extent education in citizenship can be commenced during childhood, but it cannot be done effectively whilst retaining that individual freedom which is the birthright of democracy until the individual reaches the age at which it is beginning to think rationally for itself; in fact, somewhere between the ages of sixteen and twenty-five.

An Ideal System

As far as academic education is concerned, the best results would doubtless be achieved if each child could be taught by its own individual teacher in the form of either a parent or a private tutor. Since neither of these is practicable for the bulk of our children, "schools" are necessary, though these need not be more than institutions in which organized classes are held and which pupils attend from their homes as individuals. But where development of character is concerned, the necessary training can only be provided by a "school" in which the pupils form a corporate society of their own. A "day school" can to some extent be such a corporate society, but its influence upon the character of the pupils will be limited by the fact that every evening they will be released to return to their homes, in which inevitably they occupy a favoured place where free expression of self rather than service to the community is the natural order. For this reason, as well as the unavoidable progressively diminishing effect of parental influence and control upon the child which has already been described, it follows that for the proper development of character "boarding school" is necessary. Only there can the influence of life in a corporate society have an adequate opportunity of moulding a child's character. The correlated leavening influence of home life is provided by the child's return to its parents for periodical holidays.[4]

A school as a whole is too large a corporate body to provide every individual pupil with adequate opportunities for character development. Furthermore, a school as a whole inevitably tends to become self-sufficient in outlook, which is the antithesis of the spirit of unselfish service which it must inculcate into the character of its pupils. They must therefore be sub-divided in many ways—into houses for domestic organization, into classes for academic instruction, into teams for games—and in each every child given full opportunity to learn both real unselfishness and

[4] A further argument for boarding school for all is that it would overcome the strong reluctance to leave home which exists throughout the working classes to an astonishing degree, even among boys of eighteen. As a result of this homesickness few young men or women before the War were prepared to work away from their homes, with consequent dverse effects upon the proper distribution of labour in the country not to mention eluctance to emigrate to the Dominions and Colonies.

the true, but not blind, obedience of good discipline, together with leadership and the ability to accept responsibility which this involves.

Acquisition of knowledge and development of character can for practical purposes be completed at school or college, but such institutions in themselves are too small and limited in conception for adequate education in citizenship. Some instruction in what may be termed the theoretical aspects—economics, political government and so on—can be carried out, and the elements of practical citizenship can and should be taught by enrolling the child in a youth organization which is national in its scope. But the theoretical aspects cannot be adequately appreciated until a later age, whilst the time which can be made available for the activities of a youth organization is unavoidably too little to have more than a superficial influence compared with that of the relatively narrow organization of the school itself. Just as boarding school was shown to be essential for the adequate development of character, so a period devoted *entirely* to service in a larger national organization is necessary to complete an individual's education in the duties of citizenship. It should take the form of whole-time service to the State, since only thus can one gain a realization of the part which each individual can play in such a vast and complex organization, and the benefits which accrue to each individual as a result of being an effective member of it. Only by devoting one's whole time to a State organization can one realize the blessings which accrue to both individual and society from true service in which there is no thought of private profit.

An ideal educational system would then be organized on the following lines. Up to the age of six each child would be at home. During these years parental example and control are the best initial influence on character, while the first stage of elementary academic education should be within the capabilities of every parent. From six to ten the child would attend daily at a "primary" school where academic instruction would take the form of completion of education in the three R.s, coupled with a start on more general subjects. Here, too, the child is initiated into life in a corporate body and the part it must play in the life of the school as a whole as well as the lesser organizations within it—class or team—thereby developing its character. Finally, such schools would take the first steps in inculcating citizenship by enrolling each child in a unit of some youth organization such as the Scout Movement.

At ten the child would pass on to a boarding school, organized on the lines of our great public schools. Here the second stage of academic education would be completed and character development continued, though on a more effective scale; since as the child's sense of responsibility grows it can play a progressively greater part in the various units of corporate life. Preliminary education in the academic aspects of citizenship would now form a part of the syllabus and the practical side taught by membership of a unit of a youth organization of a more advanced type such as a Cadet Corps. The specialized instruction which forms the third part of the academic side of education should commence at the age of sixteen. Dependent upon the type of work which the child intends to make its job in life, as well as its financial circumstances, apprenticeship may either follow or be carried out at the same time as attendance at a university or technical college. In either case development of character will be continued, for both as a student and as an apprentice the youth will become a member of a number of corporate bodies—clubs, teams and societies—in the running of each of which he will play an even greater part than at school. Finally, during this period—from sixteen to twenty-five—

education in citizenship will be completed by a period of service devoted entirely to the State; and as long as armed forces with their long-established spirit of *service* exist, there can be no better organizations in which that period should be spent.[5]

We are led thus to the conclusion that a period of compulsory service is not only necessary in the interests of National Defence but also for the proper completion of education in citizenship. To have a reasonably lasting effect upon the individual this period cannot be less than twelve months; it may with advantage be prolonged to two or even three years. Ideally it should take place between the ages of eighteen and twenty-one; that is, by the time character has sufficiently developed for the individual to begin to think rationally for itself but before that character has hardened to its final form. In practice, it is undesirable in many cases that academic education shall be interrupted, even during its final stage, by the acquisition of specialized knowledge. It is therefore necessary to leave the exact age at which this National Service should be performed open to the choice of the individual, provided only that it falls between the defined limits of sixteen and twenty-five.

The whole of the above educational system should, ideally, be standard for all. But since we live in a world far removed from Utopia, if only because all men are not given equal ability by their Maker, it is not practicable to organize it in such a way that all children go to the same standard schools. The advantage which would thus be gained in raising the general standard of learning, character and citizenship would be more than offset by the loss which would be suffered by failing to develop to the full extent the powers of the more able. God graded humanity and ordained that some should lead and others follow. In all its stages any educational system must be graded to suit the capabilities of the individual both in brain and character. It follows that the system should be State-aided to the extent that the means of the parent are neither a bar to the child receiving the best available education, if its ability justifies it, nor an automatic qualification where its ability does not. It follows, too, that, except in so far as it has an influence on character, class distinction should play no part in deciding the grading of a child for educational purposes.

The British System

The present British educational system has only evolved to any large extent during the last fifty years. Before 1914 it was one of the clearest expressions of the class structure of society. There were elementary schools—religious and secular—for the poor; grammar or cathedral schools for the trading classes; and preparatory and public schools for the governing class. The poor were provided, if they cared to take advantage of it, with the three R's, but a more general academic education was rarely available for them. Specialized knowledge in its most elementary form only could therefore subsequently be absorbed. Character training and education in citizenship were practically ignored. For the trading classes a better academic education was available but character training was little

[5] "The Armed Forces of the Crown help in producing good citizens. We do not consider that the training of sailors, soldiers and airmen ends when they have been taught to use their weapons efficiently. We try to teach them something of the great ideals which form the foundations of British character, the stimulus of British action, and the spirit of chivalry." (Air Chief Marshal Sir Robert Brooke-Popham speaking at the Royal Academy Banquet in 1933.)

more than accidental. Again, citizenship found little, if any, place. And for the governing class there was a system in which the best academic education, though available, was subordinated to the production of a character in which the individual was submerged in, rather than subordinated to the mass.

The social gradings were altered after the last war by a great extension of State-aided education, coupled with a change in the distribution of wealth among the community. No longer could the governing class always afford to send its children to the great public schools which were now no longer beyond the means of all members of the trading classes. With the compulsory provision of secondary schools, many of the grammar schools were led, either by taking boarders or by joining the National Headmasters' Conference, to become public schools. To a limited degree education became compulsory. For those who could afford it there remained the preparatory school—public school—university system in which academic education now assumed its rightful place, development of character allowed a more rational freedom of individual expression, and instruction in citizenship found a place since the majority of these schools maintained some form of youth organization, though membership was not always compulsory. For those whose parents could not afford the advantages of this system there was the State-aided elementary school—secondary school—technical college arrangement.[6] The standard of academic instruction in this was greatly improved; development of character began to find a place; even citizenship was touched on in some cases since youth organizations were provided at a number of secondary schools, though the development of these was hampered by ignorant political interference which envisaged in them only the influence of a supposedly capitalistic militarism.[7]

There is no hard and fast dividing line between these two systems. There is little difference between the tail of the preparatory school—public school column and the head of the elementary school—secondary school column. There is no great gulf between the provincial universities and the better technical colleges. Furthermore, for boys of proved ability but of poorer parents, more and more scholarships have become available to public schools and universities. In short, by a natural process of democratic evolution rather than by a revolutionary stroke of the pen, the British educational system is steadily progressing towards the ideal.

But it has its faults. Anyone, for example, who has been concerned in the last two years in endeavouring to select from the available conscripts and volunteers for the Services those with a sufficient standard of academic education to be suitable for training for the mechanical branches for which the demands are now so large, let alone the branches for which a lower standard of academic education is acceptable, will know only too well the shortcomings of our educational system in this respect. Anyone who has been concerned with the initial training of recruits must be aware of how inadequate is the character training of so many of our people and how undeveloped is their sense of discipline. All three Services have the greatest difficulty in selecting a sufficient supply of officers, so undeveloped in the majority are their sense of responsibility and ideas of leadership. Lack of education in citizenship is not merely displayed by ignorance of the need for adequate defences

[6] Commercial and Art Schools also come under this heading.

[7] In particular the London County Council's pre-War ban on Cadet Corps in schools under their jurisdiction will be remembered. It is to be regretted that this performance by such a responsible body has only recently been equalled by their decision not to co-operate with public schools in the development of better educational facilities.

to which reference has already been made. It is shown by the often small proportion of the electorate who use their vote whether in national or local government elections.[8] It is most marked in the lack of interest shown by all but a few in local government. In particular the hereditary governing class display the most lamentable lack of interest in it, apart from describing their local Council as a pack of tradesmen—which they probably are; and crooks—which is not always a perversion of the truth.

Armed forces in the modern world do not require mere cannon fodder. They require an enormous number of men and women whose academic education is of a high standard and whose character is properly developed. And the defences of a nation can only be adequately maintained if those men and women have been properly educated in citizenship. In fact, the whole of education is to some degree training in National Defence. Compulsory National Service in time of peace, even if it combines military training with final education in citizenship, is but the more self-evident part.

Improving the British System

Since we are a democratic nation, the present British educational system will only wholly attain the ideal by a process of natural evolution. But there are a number of material improvements which can be made, either now or in the years immediately after the War, by enlightened guidance from the Board of Education or, where necessary, by legislation.

Among the poorer classes there is at present an initial handicap to the subsequent satisfactory education of the child: the lack of parental attention which it receives in its earliest years due to the small proportion of time which even the mother can devote to it. Ultimately this may be remedied by improved economic conditions among the poorer classes; but at present, even if this were practicable, comparatively few of those parents have themselves received sufficient education to be able to pass it on correctly to their children. The remedy is the nation-wide provision of State nursery schools, the advantages of which are now becoming known to an increasing extent.[9] Given this development, all these children will be able to take proper advantage of the education afforded by an elementary school.

The upper age limits of both preparatory schools and public schools are at present too high. They should be progressively lowered to twelve and seventeen respectively, and ultimately to eleven and sixteen. Similarly, the present minimum leaving age for elementary schools of eleven should become the rule rather than a matter of competitive examination.

The normal age for leaving a secondary school should be raised from fourteen to fifteen and then to sixteen.[10] It is only too well known that though we already

[8] I am, of course, referring to pre-War days. Now the major reason for the small number of voters at elections is the fact that electoral registers are hopelessly out of date.

[9] One of the recommendations of the Hadow Report was that nursery schools should be established. These were to start good social habits in children from the earliest age, particularly those whose mothers were too busy to look after them. Though this report was completed in 1927, comparatively little was done to implement this particular recommendation until war conditions began to force it on the country.

[10] But for the outbreak of war the school leaving age, though with serious possibilities of exemption, would have been raised in September, 1939, from fourteen to fifteen. The President of the Board of Education declared on 2nd January, 1941, and subsequently reiterated, that full-time education must be extended to sixteen.

have nominally compulsory education for all, many children leave school inadequately educated due to the fact that the law permits parents to remove their children from even secondary schools at the age of fourteen.[11] But since this is largely due to the need for them to become wage earners more than legislation is required: economic provision for the parents of such children which will avoid the necessity for this must take a predominant place in our future plans for social security.[12] A further improvement in the laws forbidding the exploitation of child labour is also required.

Public schools, though largely for boarders, in some cases still take day-boys. The converse is true of secondary schools. Since boarding school is essential for the proper development of character, both types of school should be for boarders only. Secondary schools could then be fully and beneficially organized on the same admirable lines as our established public schools.

Neither preparatory schools nor public schools are always within the means of all children whose ability justifies them being afforded the higher type of education which these offer. A material increase in the number of scholarships and "free places" is required to make them readily available for the best children from the poorer homes. But even with this improvement, these schools are now, and will be, beyond the means of many whose children should go to them. Some reduction in their normal fees is required even if this means our privately financed schools accepting State aid. Whilst adequate education must be brought within the means of all, it should not, however, be free in any but the rarest of cases. At present among the poorer classes there is distinct evidence that free education results in many parents using little influence to see that their children make proper use of the education available to them. Parental interest and encouragement in a child's education is of material importance; the present lack of it in the poorer classes can be cured by the abolition of free education when parents will soon see that their children make proper use of that for which they have had to pay.

Finally, progressive steps should be taken to bring a higher type of specialized education to youth on leaving school. It is not so very long since in all but a few professions and trades specialized education was given entirely on the job. The novice was left to learn for himself. We have realized that the knowledge required for many tasks in the modern world is so complex that it cannot be satisfactorily gained by this means. Thus universities for the favoured few have been augmented by technical colleges for the many. This policy must now be expanded until specialized *school* education, even if only part-time, is available for and is normally taken by all, from the boy who required the university degree necessary for an academic career to the girl who needs sound instruction in domestic economy to enable her to run her home and look after her children in an adequate way. And

[11] In 1939, 87 per cent. of children in England and Wales left school at the age of fourteen.

[12] The Hadow report on education in 1927 recommended the universal extension of the school-leaving age. This was designed to give every child an education divided into two parts: primary up to the age of eleven, and secondary from eleven to fifteen. When a School-Leaving Age Act was finally passed in 1937, however, it allowed local authorities to grant exemptions to children of fourteen years who could take up "beneficial employment," or whose parents were so poor as to be dependent on their earnings. The Act, therefore, had little effect in distressed areas especially. (*The Long Week-end* by Robert Graves.)

in the case of wage-earners a material part of this education should be in the *employer's* time.[13] Evening classes though of value are not a satisfactory solution in themselves, since adolescent youth cannot be expected to devote its leisure to study at a time when it is adjusting itself to the manifold changes involved in leaving the sheltered life of school for work in a world in which it must largely fend for itself.[14]

YOUTH ORGANIZATIONS

The theoretical aspects of citizenship—economics, elements of political government and kindred subjects—have in recent years been added to the curriculum of some schools. They should form a compulsory subject in all secondary and public schools for children between the ages of fourteen and sixteen.

Practical education in citizenship for children of all ages has been available through the various youth organizations during the last fifty years. Unfortunately few but their wise founders have realized the importance of this, with the result that membership is in practice far from being available to all, and far from being compulsory. Even when available many children received little encouragement to join them.[15] During the last three years their additional value as preliminary training for the Fighting Services has become apparent with the result that, belatedly, the once almost moribund Cadet Corps have been rejuvenated and rapidly developed into an important aspect of our national education of youth in time of war. The strides thus made in one particular type of youth organization can with advantage be extended to all before the apathy of peace again settles upon the nation.

The existing youth organizations can broadly be divided into three groups. First, there are the creations of Lord Baden-Powell—Wolf Cubs, Boy Scouts, Sea Scouts, Girl Guides, and so on. Their object—to teach that life of service to others which is the essence of good citizenship—is aptly summed up in their dictums, "one good turn a day," and "once a Scout always a Scout." Militarism, except in the form of elementary martial discipline, finds no place in them. Though of value to children of all ages they are most suitable for those between the ages of six and fourteen. To-day they are somewhat moribund, perhaps a regrettable result of war.[16] But with strong guidance they can easily be revived.

The second group consists of the Boys' Brigade, Church Lads' Brigade and similar organizations. Whilst basically similar to the first group, these have a distinctly religious character naturally derived from the particular branches of the Christian faith which sponsors them. As a whole they have never gained the

[13] A number of engineering firms in such places as Birmingham and Coventry, the Gas Light and Coke Company in London and Cadbury Brothers at Bournville had before the war already initiated arrangements on these lines. Doubtless, there were others.

[14] On the question of compulsion in education, Professor A. E. Morgan remarks in *Young Citizen:*

> "Nor need we shrink before the bogy that has alarmed many good folk who fear that compulsion of adolescents will necessarily result in regimentation such as damned youth in so many other countries."

[15] Whilst there were some seven million children in Great Britain between the ages of six and sixteen, the total membership of all youth organizations before the War did not exceed one million.

[16] The pre-war figures of 387,000 boys and 475,000 girls in the Scout Movement have now fallen considerably.

same hold on the youth of the country :[17] their aim, though fundamentally sound, was too narrow in execution. They did not encourage youthful pursuits to the same degree as the scouting organizations, failing in consequence to appeal to more than a small proportion of children ; in particular they were never extended to the children of the upper classes. These defects are not, however, beyond remedy ; and, as with the Scouts and Guides, these boys' and girls' brigades are most suitable for children in their earlier years.

The third group consists of the three Cadet Corps sponsored by the Fighting Services. The one-time Officer Training Corps—class-conscious in its restriction to public schools, and the British National Cadet Association, have been combined and converted into an Army Cadet Corps—a unit of which may be maintained by any school with boys of suitable age.[18] Based on the Air Defence Corps founded in 1938 by the Air League of the British Empire, the R.A.F., with their usual drive and a great blaze of publicity, have established a similar corps.[19] For many years the Navy League ran a Sea Cadets' Corps ; rather belatedly this has now been taken over by the Admiralty.[20] Admittedly there may be something about the R.A.F. which appeals to the mechanically-minded youth of the country. Admittedly it is easier to bring boys in any part of the country in direct contact with the R.A.F. than to bring them into contact with the sea and ships unless they live in or near a port. But surely the fact that the Sea Cadets are very much the Cinderella among the three Cadet Corps is unsound in a nation whose naval strength is its first line of defence.

All three Cadet Corps are rightly designed to be suitable for children in their teens.[21] Elementary training for the particular Service concerned has a predominant place in their curriculum, though a wider concept of service remains.

In conjunction with the other reforms in our educational system already detailed, it is considered that for children between the ages of eight and thirteen membership of one of the Scout or Boys' Brigade organizations should be compulsory.[22] To make this practicable it will be necessary either for the schools to maintain such an organization themselves, or to be closely associated with one in their own area.

Similarly for children between the ages of thirteen and sixteen membership of a Cadet Corps should be compulsory, with the natural consequence that it will be necessary for such an organization to be maintained by all secondary and public

[17] Before the War the Boys' Brigade had only 165,000 members in the United Kingdom. The Church Lads' Brigade had a further 7,250. Similar girls' organizations had a total membership of approximately 40,000.

[18] The combined membership of the O.T.C. and B.N.C.A. before the War did not exceed some 25,000. The Army Cadet Corps now has 130,000 members.

[19] In 1939 the Air Defence Cadet Corps was about 10,000 strong. Under the Air Ministry this figure has grown rapidly to about 200,000.

[20] Before the War there were only about 7,000 Sea Cadets. This figure has now risen to about 30,000.

[21] Whilst the actual organizations referred to in the last paragraph are for boys, there are corresponding corps for girls now established under the officially recognized National Association of Girls' Training Corps.

[22] The scope of both movements should incidentally be widened, each adopting the best features of the other.

schools. To stop sometimes unseemly competition between the three Services for the youth of the country and at the same time to sow at an early age the necessary seed of co-operation between the three Services, the present three Cadet Corps should be merged into one. In the resulting National Cadet Corps there would be naval, military and air branches. Each school corps would have a company of each, boys being permitted to choose that to which they would belong subject to maintaining reasonable numbers in each.

The principles of education, the ideal system and the improvements required in our present one are applicable to the female sex as well as the male, though naturally their application must differ in detail. Few will question this as far as academic education and development of character are concerned, though there will be greater opposition to compulsory boarding school for girls than in the case of boys. It is considered that youth organizations for girls are as important as they are for boys, though naturally the actual subjects included in their curriculum will perhaps be largely of a domestic rather than a military character; but the spirit of service which is what finally matters will be there.

NATIONAL SERVICE

The arguments for compulsory National Service have already been detailed, together with the suggestion that it should be for a period of at least one year and preferable two or even three. It has also been noted that the actual age at which it should be done should be left to the individual, subject to it falling between the ages of sixteen and twenty-five. It is now intended to examine this question in greater detail, its application to the male sex being considered first.

In the first place, the period spent in National Service should be compulsory for all, with the exception of those whose physical or mental health render it impossible. Those in the lower physical grades, though possibly debarred from normal military service, should not be exempt; special units in which the training and duties are modified to suit them, and in which provision is made for dealing as far as possible with their physical deficiencies, should be maintained.

National Service should be available in all three defence forces, at the choice of the individual as far as possible commensurate with maintaining their necessary relative proportions. It should take the form of actual service in those defence forces, for military training will not suffer if it is tempered by the introduction of a broader education in citizenship. The first three months would be spent in an initial training establishment for recruits. Thereafter the "conscript" would be drafted to an actual Service unit of the Navy, Army or Air Force, of which he would be "on the strength." Nine months "active" service only would be compulsory, but an extension to a total of three years service should be available to all.

In addition to officers, the three Services would still require a quota of longer service and therefore more experienced men, particularly in order to provide N.C.O.s. Whilst the majority of "conscripts" would return to civil life at the end of their national service, thereby forming a vast national reserve, a limited number of volunteers would be signed on for long service. This would, in fact, become the normal channel for recruitment to the Services. It would not, however, supersede other sources where these were required, as in the case of officers and the more highly skilled branches of "other ranks" for which a long specialized initial training is needed before joining a Service unit. Though promotion to officer would be open to all ranks who volunteered for permanent service, all three Services

would retain their officers' training establishments as the normal source for the provision of their regular officers. Similarly, each Service would retain its technical training establishments for the provision of long-service experts in the mechanical trades, though entry to them would not be barred to conscripts who volunteered for long service and whose civil specialized training and experience justified it.

Some adjustments to the previously conceived ideas of service in the three Forces in time of peace would be necessary in order to cope adequately with compulsory National Service. For example, in the Navy it might be necessary to provide special training squadrons for a number of practical reasons, not least the fact that it would be desirable that as many men as possible in their comparatively short period of training should see some service abroad. To effect this in the other two Services, at least in the case of those who elected to do two or three years service, it would be essential to provide a much more frequent system of reliefs for those serving abroad than has been the custom heretofore. Active service against the elements, if not the enemy, is normal for both Navy and Air Force in peace. Virile steps must be taken to provide it for the Army as well, particularly at home. The old idea of a sedentary and inevitably dull barrack life, broken only by a month or so of manœuvres in the summer, must be replaced by one in which exercises in the field on a reasonably extensive scale are carried out at intervals throughout the year.

Finally, the educational services of all three Forces must be expanded so that education in the wider aspects of citizenship form part of the curriculum of training. Here the Army has already set an excellent example in the work of its Bureau of Current Affairs (ABCA). An extension of this system to all three Services on the larger scale which would be practicable in peace when military training would not occupy such a high degree of priority will be necessary. Lectures, debates and discussions, conducted not only by officers but by the best civil brains available in the country, are required as a normal part of Service life. Economics, political government, national and foreign history, " military " geography, imperial defence and current affairs, are the chief subjects to be covered.

Ideally, a system such as the above should be applied to women. In practice it is doubtful whether this would be feasible owing to the large numbers involved. Fortunately, neither education in citizenship, nor " military " training in order to provide a reserve for mobilization, is so necessary; in particular much of the former can be and is done for women on marriage by their husbands. On the other hand, now that two wars have shown the extent to which our three armed Forces are dependent on their ancillary women's services, it is considered that these should be maintained on a limited scale in peace. Thus, for women who volunteer a period of National Service on very similar lines to that for men should be provided.

CONCLUSION

These, then, are briefly our conclusions. In the years following the present war compulsory training in National Defence is desirable for the youth of this country; firstly as a necessary part of the strong defence forces which the nation must maintain as insurance against another war; secondly as the most effective means of educating the people in citizenship without which they will not realize the importance of maintaining adequate defences. The academic aspects of citizenship should be taught both in schools and the Services. To instil the practical aspects, membership of youth organizations of the existing Scout or Boys' Brigade

type for children at " primary " schools, and of the present Cadet Corps type for children at secondary and public schools, should be compulsory. The only satisfactory method of completing this education is a compulsory period of service in one of our armed forces. Finally, training in citizenship cannot be divorced from the academic and character development aspects of education, in both of which a high standard is required by all ranks of modern fighting forces. Indirectly the whole education of the British people is associated with the problem of National Defence.

But all education, particularly compulsory National Service, must have a wider aim than this. In the present world military measures are no absolute guarantee against war. Whilst maintaining adequate defences, Britain must not cease after this war endeavouring to establish a new international order in which war is no longer the ultimate means of settling disputes between nations. Such an order, though at present a distant dream, is not beyond human conception. Its organization may be a matter for governments but its success is dependent on the spirit of the people.

As Christians we accept the first great Commandment and believe in it for the ultimate salvation of the individual. We are inclined to forget that " the second is like unto it ": " Thou shalt love thy neighbour as thyself." In the full conception of that Commandment lies the salvation of the world ; and it is, after all, the foundation of good citizenship. The immediate aim of compulsory service may be National Defence, but its ultimate object should be the production of better citizens. By this we shall finally achieve that for which we are fighting to-day—Freedom from Want and Freedom from Fear.

UNIVERSAL SERVICE

A SUGGESTED SYSTEM

By Colonel K. F. D. Gattie, D.S.O., M.C.

IMMEDIATELY after the conclusion of the last war Great Britain, and indeed the whole British Empire, resounded with the loud cry of "Never again," meaning never again would they be caught unprepared as they were in 1914. A few years later the cry was still the same but its meaning had changed. "Never again will we have another war" was the brave new slogan. The change was so well meant, but the awful irony of pacifism is that it renders a cruel disservice to the cause which it has so much at heart.

There is a story told of a Cabinet Minister who resigned because he was dissatisfied with the progress of disarmament, whereupon a distinguished kinsman of his remarked: "Yes, he would. He has a resigning sort of mind. How much better if he had a more resigned sort of mind." A very shrewd comment which might be truthfully applied to every idealist who seeks to force the pace without regard to realities.

After the conclusion of this war the "Never again" cry will surely be raised once more—vociferously and in its original meaning. Shall we allow history to repeat itself by again making the same well-intentioned mistake of changing the meaning before the world is ready for the change? Those of us who have already been involved in two major wars which our lack of preparation has invited may be expected to feel very strongly on the point. We have indeed suffered. Yet our suffering will not have been in vain if the rising generation will only profit by the lesson we have so painfully learnt. Let them plan Utopia by all means, but let them keep their feet very firmly planted on the ground while they do it and not gamble recklessly for Utopia when the dice are loaded against them. Let them remember the old Latin motto "*Festina lente*" and that "the mills of God grind slowly." Let them ponder upon the words of the New Testament: "the strong man armed keepeth his house and his goods are at peace."

Many will remember how Lord Roberts before the last war toured the country advocating Universal Service. But the country turned a deaf ear to him, and after the war none of our leaders saw fit to revive his crusade. No political party had the courage to include it in their electioneering programme for fear of losing votes, and countless lives have been lost in consequence. We bewailed unemployment and spent millions on the dole, what time we were busily cutting our Service estimates to the bone and reducing our Navy, Army and Air Force to mere shadows. We doffed our hats to the cenotaph in Whitehall what time we were in fact betraying the men who had fought and died that we might live.

Were we so trusting or so simple or so smug as to imagine that we should be allowed to enjoy our goodly heritage in peace if we took no steps to protect it? Were we so presumptuous as to believe that human nature could be revolutionized in a decade when throughout the ages it had scarcely changed at all? Or was it that we were so weak and so cowardly that we retreated from every stark reality of life which did not suit us until it actually overtook us? But what does the past matter so long as this time we not only *say* "Never again," but really *do* something completely different?

Here then is a suggestion as to one way in which, when this war is over, the problem of Universal Service might be tackled. At 17 years of age every boy (unless medically exempted) might suitably be called up for service in the Navy, Army or Air Force. The proportion allotted to each would naturally have to be decided by experts and might vary from year to year. The boys thus called up would be required to do two years service, and during that time discipline and military organization would be strictly applied to all their activities; subject to this (and in many cases with the help of it) they would be required first to continue the physical and general educational training which they had commenced at school, secondly to learn how to handle some kind of military weapon or equipment, and thirdly to learn some profession or trade.

Now the profession or trade selected would be chosen with the double object of fitting the boy for subsequent employment in civil life and at the same time improving his efficiency as a sailor, soldier or airman. It would determine the particular arm or branch of the Service to which he was posted; and in this connection we should remember that nowadays the fighting Services are very highly technical and that almost every profession or trade of civil life has either its exact counterpart or at any rate something very analogous to it in one or other of the three Services.

On completing his two years service (*i.e.*, at the age of 19) the boy would be released either for actual employment in civil life (provided he so desired and civil life was able to absorb him) or else for higher education or apprenticeship. Those of course who chose to make one or other of the fighting Services their permanent career would, if accepted, automatically serve on, while those who did not fall under any of the above categories would be compelled to serve on until such time as they could be absorbed into civil life. They would in fact constitute an organized pool from which civil employers could always draw, and in the meantime they would not incur the demoralization or stigma of unemployment.

In addition to carrying out this basic two years training between the ages of 17 and 19 every boy would, after his return to civil life, be required from time to time to carry out a short period of refresher training so as to keep himself up to date. It is suggested that this might possibly last a fortnight and take place every other year. It is realized, however, that any rigid set of rules might prove unsuitable. Various modifications, and in certain cases even complete exemption, would probably have to be introduced in order that the liberty of the subject and machinery of civil life should not be unduly interfered with. Let it suffice then for our present purpose to suggest that the necessity for periodic refresher training should be accepted in general principle.

Now it may be argued that two years basic training between the ages of 17 and 19 is itself too rigid a system to adopt. It may be contended in some quarters that one year would be adequate, or again that the time of life when this basic training was carried out should be left to the individual to decide (subject to a certain age limit). Let us therefore set down some of the reasons which appear to make it desirable to select the 17 to 19 period.

First, of course, it is obvious that the selection of some particular period has the great advantages of simplicity and uniformity.

Secondly, it is between the ages of 17 and 19 that a boy most requires discipline and is most amenable to it. The habit of discipline, which includes self-discipline, if acquired at that time will stand the boy in good stead for the rest of his life and will be a national asset of the highest importance.

Thirdly, the 17 to 19 period is a most important one from the physical training point of view in which regular hours and wholesome meals play an essential part.

Fourthly, two years is the minimum space of time in which the period of training which has already been outlined can be adequately carried out, and these two years can best be spared at a time when there is a break between school and university education or between school education and apprenticeship (or actual civil employment).

If at this period of their lives all boys, other than those medically exempted, are treated alike, they will gain much and lose nothing, and should a national emergency arise necessitating their recall to service at a later date, they would be able to rejoin as an organized and trained body of men, each knowing the particular arm or branch of the Service to which he belonged and each inspired by a feeling of *esprit-de-corps* and comradeship such as two impressionable years in one of the fighting Services could not fail to have evoked.

So far only males have been considered, but to-day no scheme of Universal Service would be complete which did not make provision for the mobilization of our woman power in case of national emergency. It is considered that some scheme should be worked out for giving girls a period of basic training on the same sort of lines as those suggested for boys. The duration and scope of such training, the age at which it should take place, and the refresher training which should follow it, are all matters for deep reflection by those principally concerned—namely women. No attempt is here made to do more than emphasize that some scheme of Universal Service for women must be evolved.

But what use, it may be said, is any scheme of Universal Service for anybody unless provision is also made for the ships, the aircraft, the tanks, the guns, and all the innumerable items of equipment and supply which modern war demands? A pertinent enough query no doubt, but not altogether unanswerable. After the conclusion of the present conflict it is sincerely to be hoped that the provision of all the dread paraphernalia of war will be governed by effective international agreements for the limitation of armaments.

Universal Service, by educating public opinion, is bound to impress on the electorate of any nation which adopts it and on the future political leaders of that nation, three vital necessities: first—the necessity of making every endeavour to secure agreements which are really international for the limitation of armaments—no nation, however small, must be excluded or allowed to exclude itself; secondly—the necessity of ensuring that such international agreements are respected; thirdly—if they are not respected, the necessity of insisting upon immediate counter preparation. That is the only answer to those who start to plan another war, and no financial considerations nor humanitarian ideals must be allowed to prevent that answer being promptly given.

There is nothing in universal service which can possibly be interpreted to mean that war is desirable or even inevitable. It merely prepares a nation both mentally and physically for the possibility of it, and how possible it is the whole history of the human race proclaims. To bewail or, worse still, to ignore the possibility is not the way to remove it or even reduce it. We must insure against it as a prudent man does against fire, and we must be prepared to pay the premium which must include the cost of Universal Service. We have already tried doing otherwise and have had to pay a ghastly price for our improvidence both in money and in lives.

THE GERMAN ARMY

A REVIEW ARTICLE

By General Sir R. Gordon-Finlayson, K.C.B., C.M.G., D.S.O.

THE German military system is now crashing through defeat and political interference—the latter almost invariably leads to the former; but that system was built up upon logic and clear, hard, detailed thinking. The process has certainly been easier for Germany than for our wider-spread Empire with its numerous and unusual problems; nevertheless, the British Army never properly got down to the study of many of the plethora of military problems which arise or, more to the point, could possibly arise, in war more than in peace. Those problems in the main affect the Staff and may be strategical, tactical, economic, financial, social, etc., and each has its sub-heads extending from bludgeoning an enemy with or without mobility in the simplest form of combat, up to the most scientific details of practically every idea under the sun which can be used to destroy, and equally to save, the lives of soldiers. On the other hand, the German Staff nearly always obtained as a matter of course the money it required for its schemes, whereas, as all soldiers know, the British Army has been stifled by the Treasury and its representatives in most of the reforms or questions of modern rearmament that it has been keen upon for generations.

The Infantry Journal of Washington has now published a most valuable book which not only traces the gradual development of the German Staff and military system from the time of Frederick the Great to 1943, but which also gives clearly the reasons for every change or evolution and the consequent results: this is the "new and completely revised edition" of Rosinski's *The German Army*.[1]

The author is particularly well qualified to deal with his subject for after taking his degree in Berlin in 1930, he made the historical study of naval and military theory his life work, and was so officially established in Germany till 1936. In that year, he was forced to leave Germany and then lectured at Oxford on Clausewitz. From there he went to the United States, where for some years now he has been engaged upon naval and military research for Princeton and other interests. One has only to read a few pages of this book to realize that here is an authority whose interests and contacts—especially those with the German Army—have enabled him to set out what any keen soldier requires to know about the foundations of his profession, and especially what our enemy thinks about it. It brings out clearly that there is a vast difference between the German Army and our own in the extent and direction of training, in the depth of knowledge of military and milito-political problems, and in the general moulding of the officer's brain, body and wider military outlook. The German *Reichswehr*, as distinct from its Reserve branches, is a real professional army, and no one can say that of ours; although one feels that it must be so in the future. This book shows us the glaring differences, not by comparison with ours, for the British Army is never mentioned in that way, but with the French, Russian, and even the Italian Army. That gives one's pride in our own tough little Regular Army something of a rude shock.

A point of particular interest is the clarity with which the author lights up the appearance, character, inclinations and work of well-known men whose names we so frequently hear and some of us even frequently read about: such men as Frederick the Great, with his energy and drive, but surprisingly narrow outlook upon military matters; Scharnhorst and his team of Hanoverian officers, admirers and learners from Napoleon's methods, engaged by Prussia to bring her own backward

[1] *The German Army* by Herbert Rosinski (Copyright 1944 by the Infantry Journal Inc.) $3.00.

army and officer corps up to date; Clausewitz, as a member of Scharnhorst's team, seeking for military command; but somehow almost always relegated to administrative functions; and Gneisenau, the friend, but almost exact opposite, of Scharnhorst. There are many others of the early XIXth Century, and one reads how they had to struggle to keep the Prussian Army in being during the period of stagnation after the Napoleonic wars, just as we had when at that same time the remnants of our own little army had to be hidden out in the country to prevent its disbandment and the loss of all its great war impressions. So, by about 1845 so-called Liberalism in Germany had denounced the maintaining of a standing army as wasteful and warlike; it dubbed the defence forces as "mercenary hordes," and for a time we actually find the German troops sworn in to their own State Constitution in the various States rather than to their King, as had always before been the case, for in Germany the Army was always "The King's Army." This led to terrible stagnation and inefficiency; so much so that, in 1850, the "brilliant, but erratic" Frederick William IV took charge and re-established the King's authority. This authority was especially safeguarded in the then new Constitution, which existed up to the appearance of the Weimar Constitution in 1919.

In 1850 the King, with his new powers, ordered a mobilization. So many deficiencies and such disorganization were found that, with German thoroughness, the staff set to work to put things right and to build up an army which could put Prussia and her friendly Principalities out of any danger from Austria, France or anyone else. From that date we meet in this book with the builders of the modern German Army: Von Roon, Bismarck, Moltke, Schlieffen, Ludendorf, von Seekt, and others, right on up to 1943. The descriptions of these men, their tasks as they conceived them and how they set about them are fascinating, and very instructive. The point that strikes one most is the boldness with which one and all without hesitation—often with little regard to the political effect within their country, but always carrying the King (or Emperor) along with them—tackled their job of bringing the military machine up to what they—again with the King's concurrence—considered the country required for its aspirations. Those aspirations, ever since Frederick the Great made Germany really ambitious, did not diminish as time passed, as the reasons for this and the last war show. Germany's armed might grew and was tested, as in 1866 and 1870, was paid for, and the military caste became established, with hardly any consultation with the political leaders of the country, until she truly earned the tag "Germany is not a country with an army; but an army with a country."

Enough of generalizing! A more detailed description of this book will, it is hoped, attract officers to read it, for without question it is of great professional value. First there is an introduction by Colonel Joseph I. Greene, Editor of the U.S.A. *Infantry Journal*, which should be read carefully. He deals mainly with the training side and with the responsibility of an Army Staff to keep that Army abreast of military developments the world over. Then Part One covers the period from Frederick the Great—or more correctly from that of his father Frederick William I of Prussia—up to the time of the Treaty of Versailles and the secret rearmament following thereon. This part is a detailed history of the growth of the German Army, with the reasons for that growth. It is a wonderful story and gives us glimpses of all sides of German life—the wars forced upon Germany; the wars she forced upon others; and the changes necessitated in the Army by reason of the changes in the relative strengths of dangerous neighbours, especially the Hapsburgs in the late XVIIIth Century and, later on, Napoleon.

It is particularly interesting to trace the effect of the developments in arms upon tactics and organization over this long period. The importance of this was never lost sight of by the German leaders and new ideas were at once acted upon if they were approved by the General Staff, even if they did not necessarily find favour with the Government. It is also of interest to see the growth of the military caste in Germany, including the relations of soldiers, both officers and other ranks in their different spheres, with civilians and the premium placed in the early days upon " gentle birth " or " blue blood " for officers. The effect upon the German Army of the growth of democracy, between then and now, gives much food for thought.

Part Two consists of what appears to be a series of lectures or articles upon staff work and command, ending with a chapter upon German strategy in the present war. The concluding chapter especially holds one with its indications of Hitler's difficulties after the break-through on the Meuse and its discussions of what the Germans might have done instead of fighting the Battle of Britain. The author produces very acute strategical arguments, which, if Hitler had perceived them at the time, might have placed us in far greater difficulties even than we had to face. But the truth appears to be that Hitler never understood sea power, so we escaped the predicament we might have been in if, after Dunkirk, we had been left to stew in Great Britain while the Germans went all out for Alexandria.

Broadly speaking, Part One is a story of facts showing step by step the building up of the German Army in strength, armament, knowledge of strategy and tactics, its position as a force in the nation, its system of command and, not least, its great tradition. It therefore commends itself especially to study by young officers, for that matter will not be found so clearly and concisely set out anywhere else. Part Two contains instructional food of a different nature. It is, so to speak, for the advanced class and often admits of considerable argument upon broad lines. In the main it provides a very interesting discussion and narrative ; but we may yet read similar matter in other histories.

The very first chapter of the book shows us, by deduction from interesting references to the early history of Prussia, how almost unceasing wars over centuries have, as the author puts it, " hammered into it (the German nation) that war is an inevitable element of human existence." There will be much argument about that, but that conviction was handed down to Frederick the Great, just as was the brilliantly organized little army of 76,000 men which his father (Frederick William I of the House of Hohenzollern) had literally scraped together, at tremendous cost to his very poor people, from the rocks, sandy plains and icy blasts of his native Prussia. Both that conviction and that little army, used with ruthless energy by Frederick the Great for the purpose of aggrandisement, accomplished all that was required. They created an everlasting example for all subsequent German militarists to point to whenever they wished to carry the German people with them in their all-too-many designs upon the peace of the rest of the world. No one knows better than German military chiefs the value of tradition amongst fighting men. It is the tradition of both the inevitability of war and that of the rich advantages to be gained by war—as Germany can show ever since the days of the Teutonic Knights and the Mark of Brandenburg up to 1918—that no doubt makes it so easy for the German people to be led into war even nowadays. Those beliefs have to be killed before the world is " safe for democracy." Consequences arising from those great and yet terrible traditions of the German Army recur frequently throughout the early chapters ; but one obtains very little impression of the regimental

tradition that we know and value so highly in our Army—or rather did so, for it seems as if various factors in this war are tending to kill that most priceless possession. However, one is gratified to note that nowhere in the book does the German General Staff extol war as bringing out all that is great and honourable in men; that old German bluff must have died with the last world war—and well it might.

In the early chapters, too, we see the status of the officer forming into something which stood for a great deal with the nation. The heirs of the richest, as well as of the poorest, of the aristocracy were expected to consecrate themselves to the Army, and Frederick the Great raised every member of his Corps of Officers to be a Companion in Arms of his King, with the privilege of addressing himself directly to his King and master.

It was under Frederick the Great's father that the idea that "all inhabitants of the State are born to bear arms," or universal military service, was inculcated in Germany; but in actual practice in those early days the exemptions were so numerous that "in practice the whole middle class down to the more prosperous artisans, was exempted." However, that lesson was not forgotten for we see how, after Germany's decisive defeats by Napoleon at Jena and Auerstadt (1806) the great Scharnhorst—a man of no military appearance and of poor speech but unceasing labour, whom no detail escaped—assisted by Baron von Stein, one of Germany's greatest statesmen, used this experience to reconstruct the German Army within the limits imposed by the Treaty of Paris, by which Napoleon allowed Germany only 42,000 soldiers and so thought he had suppressed her for ever.

One has no doubt that President Wilson, Mr. Lloyd George and M. Clemenceau thought the same in 1920 in the Treaty of Versailles, but it is evident that they did not know the history of the German Army as it is now given us to study. Chapter Six, "Versailles and Re-armament," points out much that I wish I had known when, in 1920/24, I had to deal with the implementation of the military clauses of that Treaty.

One could write for long about the many other vastly important professional points in this book, but space permits little more than some general remarks on organization, staffs and command.

It was Scharnhorst who, in 1807, was entrusted by the King to effect the reorganization and reform of the Army. He became the head of the "Reorganization Commission" and drew in his famous "Band of Brothers" to help him. These included Gneisenau, Clausewitz and many younger officers who had been trained under Scharnhorst—a very strong team. One of Scharnhorst's first moves, based upon his observance of Napoleon's system, was to organize the German Army into divisions, for he realized that even a divisional commander must have under his own hand something of all the arms, for the battle is fought by all arms in co-operation. He also decided that in war the whole resources of the nation must be made available; but he was wise enough not to thrust that idea on the country straight away. The steps he took from 1808 to 1813 to work up to it show a tremendous psychological sense, in which he differed greatly from later Germans.

It is perhaps rarely realized that during the period after Jena, Berlin was occupied by the French, whose treatment of the inhabitants was so harsh that Scharnhorst and his King were driven to preparing for their wars of liberation. Much of the hatred which exists to-day between the Germans and French was born at that time. That harsh treatment also impelled Scharnhorst to trick Napoleon in the matter of the standing army of 42,000 men. We see in the "era of reform" how it was done; but we see again in the period "Versailles and Re-armament" how von Seekt tricked the Allies in a very similar manner. Trickery and deceit are apparently

part of the ruthlessness driven into the Great General Staff throughout their long training. Scharnhorst died of a wound in 1813, but before he did so he had established a Ministry of War, General and Administrative Staffs to take weight off the Generals, and the famous War Academy or Military School for Officers. He also founded the Landwehr and, on the defeat of the Grand Armée, had mobilized an army of 300,000 men, or 6 per cent. of the total population. Unfortunately, this history does not tell us how they were armed.

After 1815 little except stagnation prevailed, but the chapter "Nineteenth Century" shows how things woke up under von Roon, who brought Bismarck from being Ambassador to Napoleon to accept the King's request to carry on the Government (1861). Von Moltke appeared as Chief of the Staff at the same time, and the manner in which he, with his great political as well as military instinct, helped Bismarck and Manteuffel (head of the Military Cabinet) to pull the country and Army together, is most instructive reading; though agreement between them was not always easy, nor the system always good. We note here that though their officers need no longer be highly born, Jews are relegated to the rank of Reserve N.C.O's.

All this time the Great General Staff—the central planning organ, had continued gradually perfecting its training and gaining a better view of its functions, especially when Moltke, baulked at first by certain civil ministries, found himself with virtually no more power than the head of the Staff College. But he improved the staff and its work and, wonderful to read, established a scientific and economic research branch for war. It was also Moltke who really established the Chief of Staff idea, which is now emulated by British Generals. All through the book one notes how insistent is the call for the Commander-in-Chief to be free to think and to give decisions upon problems presented to him, in proper perspective from all sides, by one man. Thus a Chief of Staff "carries" a weak Commander, but is the confidant, friend and trusted adviser of a good Commander. Many examples are quoted, not excluding Moltke's own position of Chief of Staff to his King in 1866 and 1870.

This question of the staff is fully discussed in "Co-ordination and Command" in Part Two. That chapter teems with intimate touches of military history which one obtains nowhere else, and is so practical as to force one to wonder whether our own Army has not still got a good deal to learn. It is not desired to give the impression that the German systems are always right; far from it, but there is much to learn from studying them. For example, the narrow outlook upon life generally, as seen by a hard-working German staff officer, would seem to be a great handicap. On the other hand he does learn every technical inch of his profession, and so do his fellows; and, moreover, each knows it so well that he can take up another's work, where he left it off, without any trouble at all.

But as one reads these pages, one becomes captivated by the thought of how hundreds of carefully selected intelligent men have worked day by day, for probably ten to twelve hours a day, for centuries upon the training and organization of the German Army. The result is that, though some points such as tactics, fighting quality and the will to win could not be finer, the machine must be so ultra-organized that it just cannot stop. It is questionable, therefore, whether what we now see going on in Germany is not simply the result of over-organization. The components of the machine, taught almost as automatons, simply cannot do anything but go on till one day—not far distant perhaps—the whole mass will come crashing to earth simply through having become top-heavy and helpless in face of the unforseeable. Lack of elasticity is a deadly sin in any German staff plan; yet German organization and administration seem often to be simply non-elastic.

This is a book of exceptional interest which should be read by every British student of war, more particularly because, in the past, we have not been too good at knowing our enemy.

NAVAL WEAPONS AND TACTICS

By "NAVARINO"

TO advocate that those who are experts in weapons should dictate tactics would be to invite the retort that this is the materialist viewing war from his own narrow perspective, or the specialist trying to usurp the place of the commander. On the other hand, it is pertinent to question whether it is always realized that to study tactics without a good working knowledge of weapons is to lose sight of their ultimate object—the destruction of the enemy.

A definition of "Tactics," published in a Military Dictionary in 1810[1] refers to them as consisting of "a knowledge of order, disposition and formation . . . . These dispositions are severally made, or one disposition follows another, by means of manœuvres and evolutions." It was from that limited angle that naval tactics were still being studied more than a hundred years later in the days of "steam tactics." Even in somewhat more enlightened times when the so-called "P.Z. Exercises" had been introduced there was still a tendency to visualize tactics as they were portrayed in the diagrams showing the movements of the opposing fleets. The positions of the ships were plotted as black and white shapes, and if, for example, these showed that the commander of one side had "crossed the T" of his opponent he was credited with having secured a tactical advantage. No attempt was made to plot fire effect, and such matters as light, wind, sea and smoke, and the influence of them on gunnery were given all too little consideration.

Until director-firing was introduced and modern methods of fire control devised, the gyrations of fleets which were indulged in under the guise of tactics would often have resulted in great loss of fire effect because the guns of the ships could not even have been concentrated on their proper targets, much less would the rapid changes of range and deflection been competed with. Indeed, it may be said that in those days the relations between tactics and gunnery were inclined to be strained rather than sympathetic.

That state of affairs has long since been relegated to the limbo of the bad old days, and war conditions bring out forcibly that the only tactics that matter are those which enable weapons to be used with their maximum effect; in fact that the ship must be handled as will best serve the armament, and what applies to the ship applies to the fleet or squadron of which she is a unit.

In peace time, however, there is a natural tendency for this to be less apparent and for the study of tactics to be pursued without full consideration being given to the potentialities and limitations of weapons and to the circumstances in which they are employed. This does not mean that every commander, if he is to be a successful tactician, must also be a specialist in all the technical details of every weapon with which he may have to deal. What is of importance is that he should know how such weapons can be used to best advantage and that he should keep abreast of new developments.

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[1] *A New and Enlarged Military Dictionary in which are explained the Principal Terms . . . of all the Sciences . . . necessary for an Officer and Engineer.* By Charles James, Major in the Royal Artillery Drivers.

The handbooks compiled in the Gunnery and Torpedo Schools necessarily cater for the specialist. What the student of tactics needs is to have in readily accessible form the general description of a weapon, what it is designed to do, and an outline of how it does it, under what conditions it has proved most successful and in what circumstances it has proved unsuitable. He is also concerned with such practical details as effective range, rate of fire, reliability, endurance, value for attack, defence or both.

After a major war it is usual to publish a history which will provide a record and commentary of the principal events. This would only be complicated and confused by descriptions of weapons and their tactical use ; that needs to be dealt with separately. But whereas it is often desirable to let a little time elapse in order to review events in their correct perspective, it is important to record information about weapons—especially those used by the enemy—while it is readily available. Immediately a war ends there is a tendency to scrap and forget anything the utility of which seems to have come to an end, with the result that instead of being able to build on past experience, too often it has been necessary to repeat the slow and wasteful process of " trial and error."

Again, there have been cases in the past of weapons having been produced or continued in production without regard to their tactical and practical utility. Alternatively, there is the risk of a good new weapon being used prematurely, mis-used or neglected because its true functions have not been appreciated.

It appears, therefore, that what is needed is that at an early date there should be compiled a record of all the principal weapons used in this war—including especially those of the enemy—how they have been employed and the extent of their utility. This would be used in due course for an official treatise on their tactical use, which would be the " bible " of the student in years to come.

JET PROPELLED AIRCRAFT

By Group Captain G. W. Williamson, O.B.E., M.C., M.Inst.C.E., F.R.Ae.S.

THERE are two main types of jet propelled aircraft, only one of which is likely to be used in practice during this war :—

(1) The aircraft adapted for rocket propulsion—not very efficient at speeds of less than 1,000 miles per hour.

(2) Aircraft driven by power jets of the type used in this country for control by pilots and those used by the Germans in pilotless form.

Rocket Propulsion

A great deal of research has been carried out by the Germans on rocket propulsion, while more than thirteen years ago model aircraft propelled in this way were flown in Scotland. The system depends on the expansion of hot gases resulting from the burning of a charge which may be either liquid or solid. An example of the solid charge would be gunpowder or cordite ; if the former were used it is compressed into a rod, only the end of which is in contact with the initial flame.

Rockets are now being fired from British aircraft for attacks on German headquarters, power stations, enemy vessels and tanks, and for these the propulsive medium consists of cordite held in a tube a few feet long.

It would be possible to build a full size aircraft capable of being propelled by rocket methods, but it would have certain outstanding disadvantages. One of these is that the temperature of the jet would be so high that no metal would withstand it for more than a minute. Another disadvantage is, as already stated, that the efficiency is very low below 1,000 miles per hour ; and the weight of the propulsive charge is so great that, for say a 200-mile flight, only one-fifteenth of the total weight would be available for the explosive charge on arrival.

Power Jets

Under this very title a company has been formed to aid the war effort by the production of aircraft driven by a power jet involving the use of engines and compressors.

If a mixture of hydrogen and oxygen is ignited within a container, a violent explosion results owing to the high temperature of the gases as they combine, and the immense speed of expansion. Similarly a mixture of petrol or some other fuel with air can be ignited and will expand rapidly ; and we take advantage of this expansion in the reciprocating engine, where it forces the piston down the cylinder and so turns the crank which drives the propeller.

We can also use this principle of expansion without a piston, when the expanding gases can be made to issue from a jet something like the jet of the rocket but on a much less intense scale. This is jet propulsion, though without the intervention of an engine or compressor.

A jet of this type is, however, far more efficient if the air is compressed before it is mixed with the fuel prior to ignition ; and so we must use a compressor, which in turn requires power. The engine used to drive the compressor may be of the conventional reciprocating type with piston and crankshaft, and this was used in early German designs ; or it may be of the gas turbine type.

More efficient expansion results from the air being compressed prior to delivery to the combustion chamber ; and the expansion develops more power if it is carried

out over a wider range of temperature, beginning for example with very hot gases, and ending with a temperature very much lower. The lower this second temperature, and, if it comes to that, the lower the air pressure, the greater the power a gas turbine will develop. In gas turbines used on a railway which runs over the Andes the engine power is 2,000 h.p. at sea level and nearly 3,000 h.p. at 20,000 feet.

In order to use efficiently a power jet of this type as the propeller of an aircraft, we burn in a combustion chamber a mixture of air and liquid fuel previously compressed. Its great expansion forces a stream of exhaust gases through the jet or jets, this part of the apparatus being at the tail in the German flying bomb ; but we might equally well allow the gases to issue from engine nacelles on the trailing edge of the wings, as is projected for large civilian air liners for post-war use.

Gas Turbines

Air has weight ; a column of it 1 in. square, reaching to the zenith will weigh about 15 lbs. If we were to measure it again at 20,000 feet up the weight of the column would only be half as much. In a reciprocating engine it is necessary for us to have 15 lbs. weight of air for every pound of petrol burned for efficient combustion ; and in order to get this weight of air into the cylinders at say 20,000 feet upwards it is necessary for us to use compressors or superchargers. Further, the higher we ascend after the limiting height of such a supercharger has been reached, the less efficient the engine becomes.

The opposite is true of a gas turbine ; the higher it ascends, and the greater the range of pressure between that in the expansion chamber and that at the jet, the more efficient our gas turbine is ; similarly, the greater the range of temperature between these two points, the more efficient the gas turbine becomes. It is, therefore, a very suitable driving mechanism for aeroplanes intended to fly at great altitude ; while jet propulsion at high speeds has certain advantages over the propeller.

The expansion of the burning gases which takes place in the cylinder of a reciprocating engine can equally well be employed to turn a fan or a propeller in much the same way as a gust of wind will turn an electric fan which was previously stationary. The expanding gases are made to impinge upon a series of curved blades, mounted upon a conical rotor, these blades passing between a similar series of blades fixed to the interior surface of the turbine casing. In their passage across the curved faces of the moving blades, the gases change direction, and are brought back to a suitable propulsive angle by the fixed blades, so as to impinge afresh upon another row of moving blades. The pressure of these gases as they expand drives the rotor round ; the rotor is of conical shape because the gases enter the turbine at high pressure and can operate at small leverage ; as they expand, their pressure falls and a longer leverage is provided by placing the curved blades at a greater distance from the rotor shaft ; that is, the gases expand from the point towards the base of the cone, the shaft being driven through its axis.

A gas turbine such as this can be used to drive a contra-rotating propeller, and may be so used on post-war civilian air liners, at least at take off. After speed and altitude are attained it is likely that the pilot will change over to propulsion by jet, switching off the propellers until such time as he may need them for landing.

If the turbine is so driven by expanding gases, it develops power ; but, reversing the process, if we were to use power to drive the turbine round, it acts as a fan or compressor and presses a cylindrical column of air forward with very great velocity.

It is used in this way in the British type of jet propelled aircraft ; the air is taken in somewhere towards the nose of the aircraft, compressed by one of these turbine type fans or compressors, combined with the fuel in the combustion chamber, and passing at high speed and pressure through the gas turbine, goes on its way towards the jet. This type of turbine compressor is styled an " axial flow " compressor because the gases are moving parallel to the axis or shaft.

The German Pilotless Aircraft[1]

The German type pilotless aircraft or flying bomb is differently constructed. A diagram has been released for publication but it does not show the details of the propulsive mechanism. It is conjectured, however, that this takes the form of a combustion chamber into which compressed air and fuel are injected under considerable pressure. The highly compressed mixture may be exploded by a sparking plug, and with this high pressure and heat combined a powerful jet emerges from the orifice at the tail part of the duct and drives the aircraft forward. The diagram shows two wire-bound, spherical, compressed air bottles and, if there is no engine, these bottles provide air under sufficient pressure to enter the combustion chamber when admitted by a valve.

A proportion of the compressed air may be applied to the driving of the gyros of the automatic pilot, which are just like little air driven turbines, and also to the operation of the control surfaces by servo motor, so as to maintain the aircraft in straight and level flight. The servo motor is no more than a cylinder with a central piston, to one side or the other of which air pressure is admitted by valves, oontrolled by a linkage from the gyros, which make a slight pull one way or the other on the control surface as the gyro directs.

What horse-power has this flying bomb ? We do not know, but it is possible to guess. The published diagram shows that the petrol tank contains 130 gallons. Assuming that this is consumed in half an hour, at the inefficient rate of one pint per horsepower-hour, the power of this mechanism might be about 2,000 h.p.

It is fairly safe to assume that there is no radio control of these flying bombs. If there were, it would be possible either to jam the directing signal or to take advantage of that signal to give other instructions to the flying bomb so as to set it on a reverse course. In that latter case, as it got further from our radio station, our influence over it would decrease until such time as it was overpowered by its original controlling station, when its course could be again reversed. So it might oscillate between two points of control until its petrol was exhausted.

For similar reasons it is unlikely that these weapons will be flown along a beam, as beams may be deflected.

An automatic pilot keeps these pilotless aircraft on the required course. The expansion or contraction of a capsule in the altimeter keeps them at a fixed height until the control is withdrawn and the aircraft dives. As regards the points at which this takes place, the aircraft might be provided with a time clock, or the petrol may be very carefully measured into the tanks as the result of experiments carried out over the sea or over Denmark.

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(1) See also the article on " The Flying Bomb," p. 246 of this Journal.

THE FLYING BOMB

ON 13th June, 1944, the Germans started using a new weapon which has come to be known by a variety of names, including Flying Bomb, Pilotless Aircraft, Crewless Aeroplane, Aerial Torpedo and, more popularly, Doodle Bug. The Prime Minister in his statement to the House used the first, which will therefore be used here.

An official account of the development of this weapon says that attacks with it were planned to take place many months ago with the object of diverting our air bombardments of German industry and communications and in the hope of raising the morale of the German people. Nearly a year ago enemy propaganda announced that they would be started quite soon. Preparations were promptly made to counter this threat.

On the night of 17th–18th August, 1943, the German experimental station at Peenemunde was attacked by Bomber Command, and the serious damage and heavy casualties inflicted caused a severe setback to the activities there. Factories and plants known to be manufacturing special weapons, notably works at Friederickshafen, were also heavily bombed and damaged.

During the year previous to the start of the Flying Bomb attack, thousands of air photographs covering many hundred square miles of Northern France were taken. From these the construction of discharge points were detected and kept under observation. Heavy bombing attacks on these places were begun in December, 1943, and continued as weather and other operational requirements permitted. The sites of these discharge points are well camouflaged and scattered, and being small offer difficult bombing targets. Nevertheless, the damage done to them and to supply depots of flying bombs was such that when the enemy launched his attack it is estimated that it was on less than a quarter of the scale he had originally planned.

Fighter aircraft, anti-aircraft guns and a balloon barrage are being used against this new weapon, and even in the first few weeks a considerable proportion of the flying bombs launched were shot down into the sea or brought down in open country.

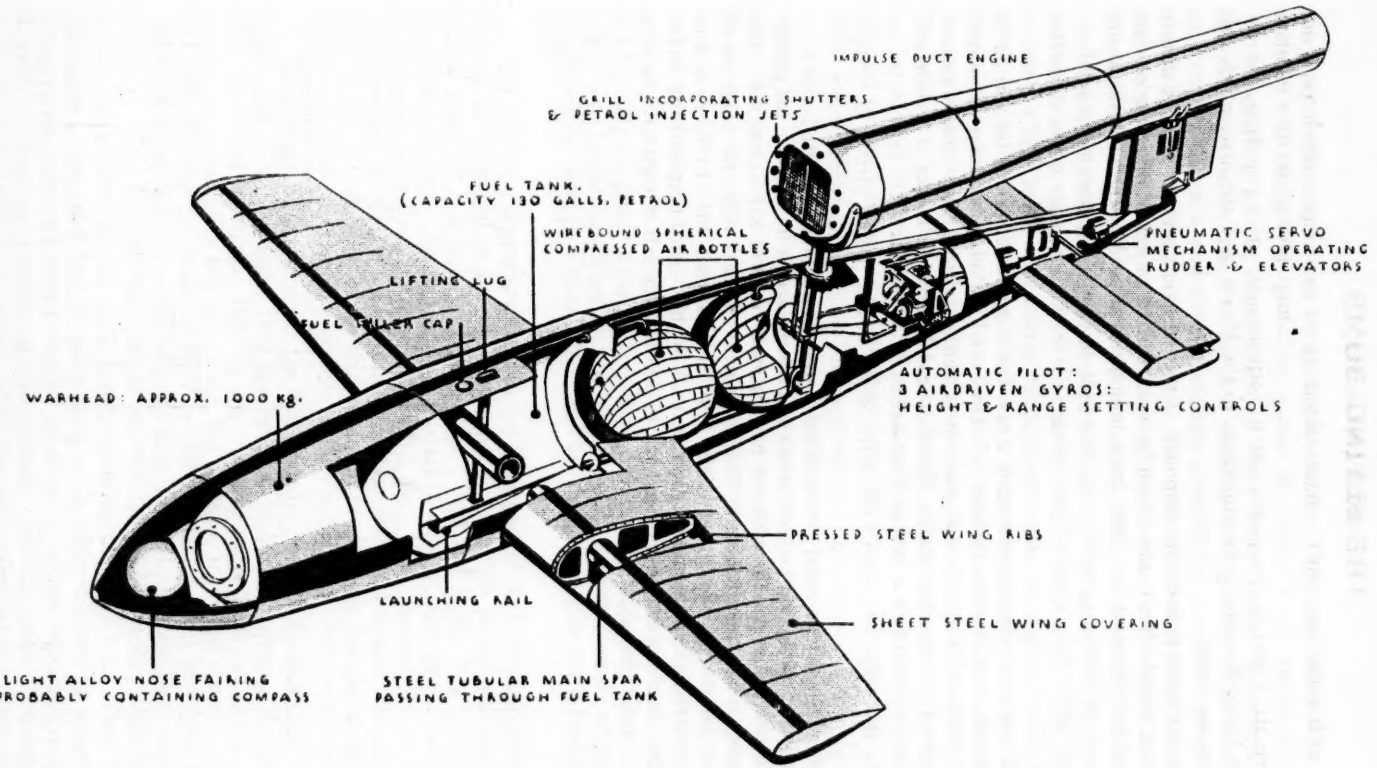
In a statement made by Mr. Winston Churchill to the House on 6th July, he said that between 100 and 150 flying bombs had been discharged daily during the previous fortnight. Considering their modest weight and small penetration power the damage they had caused by blast effect had been extensive, but it could not be compared at all with the terrific destruction by fire and high explosives with which we had been assaulting Berlin, Hamburg, Cologne, and scores of other German cities and other war manufacturing points in Germany.

Up to that time the total number of flying bombs which had been launched was 2,754, and they had caused 2,752 fatal casualties—almost exactly one per bomb. The total number of injured detained in hospital was about 8,000. A very high proportion of the casualties had fallen on London.

"The flying bomb," said the Prime Minister, "is a weapon literally and essentially indiscriminate in its nature, purpose and effect. The introduction by the Germans of such a weapon obviously raises some grave questions. . . ."

Technical Details

The Aeroplane of 30th June gives the following details of the flying bombs so far used by the enemy. There are two main types. The first has straight tapering wings of about 16 feet span. The other has parallel chord wings of about 11½ feet span with square-cut tips. The maximum speed of the latter is about 350 m.p.h.;


IMPULSE DUCT ENGINE
GRILL INCORPORATING SHUTTERS & PETROL INJECTION JETS
FUEL TANK. (CAPACITY 130 GALLS. PETROL)
WIREBOUND SPHERICAL COMPRESSED AIR BOTTLES
PNEUMATIC SERVO MECHANISM OPERATING RUDDER & ELEVATORS
LIFTING LUG
FUEL FILLER CAP
AUTOMATIC PILOT: 3 AIRDRIVEN GYROS: HEIGHT & RANGE SETTING CONTROLS
WARHEAD: APPROX. 1000 Kg.
PRESSED STEEL WING RIBS
LAUNCHING RAIL
SHEET STEEL WING COVERING
LIGHT ALLOY NOSE FAIRING PROBABLY CONTAINING COMPASS
STEEL TUBULAR MAIN SPAR PASSING THROUGH FUEL TANK

SECTIONAL DRAWING OF A FLYING BOMB

From an Official Source

the tapered-wing type is 40 to 45 m.p.h. faster. There are believed to be other varieties with larger wing span.

Information on the construction of these flying bombs is limited, and the following particulars relate to the first mentioned type only. This is of all-metal construction and is a mid-wing monoplane powered by a reaction propulsion unit mounted above the rear of the fuselage. The wing structure is composed of a single steel tubular spar which extends from wing tip to wing tip, to which are attached ribs of pressed steel. Wing covering is of sheet steel. Ailerons are not fitted.

Structurally the fuselage is divided into six sections separated by pressed steel bulkheads and covered, except for the nose section, by sheet steel. The nose section is merely a light metal alloy fairing which preserves the streamline profile of the rest of the circular section fuselage, which has a maximum diameter of 2 feet 8½ inches. Behind the nose fairing is the " war-head " of similar construction to the rest of the fuselage sections, but which contains some 2,000 lbs. of high blast effect explosive. This section is joined to the fuel tank fuselage section immediately forward of the leading edge of the main plane. The fuel-tank section is stressed to take the loads imposed by the juncture of the fuselage with the wings. Its total fuel capacity is about 130 gallons.

Behind this section is a chamber holding two large spherical compressed-air bottles, the contents of which are used to meter the fuel for delivery to the reaction propulsion unit. The next fuselage section contains the " brain " which controls the aeroplane in flight. This " brain " consists of an automatic pilot, based on the same principles as the familiar " George," three pneumatic gyroscopes, and height and range setting controls. The forward part of this section contains the base of the strut which supports the forward end of the reaction propulsion unit. All control and fuel delivery pipes to the jet propulsion unit pass through the hollow core of this strut. The height and range controls are accessible from the outside of the fuselage for pre-setting through a removable panel set in the port side of the fuselage at this point.

Carried on the supporting strut in the front part of the automatic pilot fuselage section, and attached to the top of the fin, the reaction propulsion unit is about 11 feet long. It is a true " jet propulsion " unit and is the first to be put into operational service. Air is taken in through a square mesh grille, incorporating shutters for controlling the rate of flow of air. Fuel, metered by air from the compressed-air bottles, is fed into the air stream through fuel-injection jets situated in the grille. Combustion of the mixture in the combustion chamber is by means of a single sparking-plug, which gives rise to the characteristic two-stroke motor noise.

The average height at which the flying bombs cross the English coast by day is about 2,500 feet. By night they are believed to have an average height at this point somewhat lower than that by day. Speeds range from 220 m.p.h. to about 390 m.p.h., according to the type in use, but all those at present observed have been controlled entirely by means of their pre-set automatic pilots and have not been controlled in any way by means of radio gear, although this possibility must not be ruled out. They have all flown on perfectly straight courses, losing height gradually as they have flown inland, until their propulsion units are cut. They then lose flying speed, stall, and dive to the ground at an angle of about 60 degrees. This dive may not come until some time after the motor is cut out, depending on the speed at which the bomb is travelling at that moment. Stalling speed is extremely high, as a result of the high wing loading, which has been estimated at slightly more than 80 lbs. per square foot. Range is officially quoted as about 150 miles.

THE FUTURE DEVELOPMENT OF SELF-PROPELLED GUN MOUNTINGS

By Lieut.-Colonel R. H. Bright, *p.a.c.*, Royal Tank Regiment

THE development of any equipment whatsoever, whether it be designed for use by the armed forces in time of war or for any other purpose, depends upon the nature and extent of its employment. It is not necessary, neither is it within the scope of this article, to delve into the more technical details of gunnery; but some consideration of the broad principles governing the use of the two main types of self-propelled artillery at present in service in the armies of the United Nations and those of the enemy is essential. These two types are anti-tank artillery on the one hand and field artillery on the other; and just as their tactical employment is different, so will the principles governing their development be different also. Anti-tank artillery may be used to fire high-explosive in a field artillery role, and field artillery may be used against tanks under certain circumstances; but these are then very definitely secondary roles, and the development of the characteristics necessary for them should not be allowed to interfere in any way with the development of those required for the main purpose in each case. The guns to be mounted are different, in that for anti-tank shooting a high-velocity weapon to give the maximum effective penetration of armour is required, whereas for field artillery work the flat trajectory consequent upon a high muzzle velocity is often a disadvantage, as is also always the very limited H.E. capacity of a high-velocity projectile. A special H.E. shell to be fired with a reduced charge might be produced, but this would necessitate the production of a special range drum and sighting arrangements and thus might well interfere with the efficient development of the equipment for its primary role. Such interference must on no account be allowed, and development of any characteristics required for a secondary role can only be permitted where they do not impede in any way the efficient execution of the main purpose. Exactly the same rule will apply to the development of field artillery equipment, where a comparatively low velocity gun or gun-howitzer, firing a shell of comparatively high H.E. capacity, is required.

In spite of the differences in the piece to be mounted, there are certain similarities in all S.P. equipments at present, these depending upon common mechanical characteristics of the vehicles themselves and certain tactical requirements as regards their performance which may be, to a greater or lesser degree, alike. In this connection it may be as well to define at this stage what is at present usually understood by an S.P. mounting. Not only must the gun and mounting be integral with its own means of propulsion, but some degree of armoured protection is implied, as is also a high cross-country performance, and in this latter connection the mounting is generally expected to run on tracks. The exception to these rules are anti-aircraft S.P. mountings, which are frequently on wheels and practically without armoured protection; but such equipment is not at present very extensively used. These characteristics of good protection and mobility, including cross-country performance, are therefore common to both field and anti-tank S.P. artillery equipments at the present time, as are also the speed and ease with which the gun may be brought into position and into action or take up a new position as required, by virtue of gun, ammunition-stowage, and means of traction being all self-contained.

There are at present many similarities between S.P. artillery, especially that mounting anti-tank weapons, and tanks themselves, but the characteristics of the two are already sufficiently diverse to make a good S.P. mounting a bad tank and vice versa, and for this reason alone the one should never be employed to carry out the role of the other. It is desirable, if commensurate with the standard of training of the tank crews and technical development of the particular equipment, that a tank should be able to fire on the move, and in any action a tank will be required to combine fire and movement. This implies a degree of exposure to enemy fire which can be accepted by a tank on account of its superior protection, but which cannot be accepted by S.P. artillery. On the other hand, by virtue of the more effective weapon usually carried on an S.P. mounting, the vehicle can take up a partially or completely covered position from which full advantage may be taken of the characteristics of the gun which it mounts. The partial armouring of the mounting as well as its superior cross-country performance will enable it to reach positions which unarmoured tractor drawn guns could not take up. Limitation of protection on an S.P. mounting must be accepted in order to allow the development of certain essentials such as space for the mounting of a comparatively large piece and cradle, as well as that required by the crew who operate it. Space is also required for the stowage of comparatively bulky ammunition, and vision from the vehicle should be easy, implying that the top is open. The greater relative weight of the piece and its ammunition usually necessitates lighter armour on an S.P. mounting than on a tank.

Characteristics of Self-propelled Anti-tank Gun Mountings

The characteristics desirable in this form of S.P. artillery are far more akin to those of a tank than is the case with field equipments, as is only to be expected considering the purpose for which it is intended. On the other hand for this very reason the danger of employment of S.P. anti-tank guns as tanks is the greater. These mountings require the best armour protection which it is possible to give them, always remembering that the overriding consideration is the gun to be mounted. The gun must have an all-round traverse, preferably power assisted or power operated, as the piece will be heavy and the protecting armour round it will have to traverse with it. This presupposes that the gun must therefore be mounted in some form of turret, although such a turret will require to be relatively far more open, preferably without any roof at all, and with a great deal more crew space than could be the case in a tank. The gun must be a high velocity weapon to give a good armour-piercing performance, and must be capable of a high rate of fire. Particular attention must be paid to this last requirement when considering its mounting and the details of fitting both gun and cradle to the vehicle.

In the case of a tank both gun and the armour basis of the vehicle are interdependent, in that ideally a simple relationship should be maintained between them, namely that the gun should be able to penetrate the armour of any enemy vehicle at a range where his weapon cannot penetrate. To illustrate this relationship in its simplest form, if any tank could penetrate the armour of the enemy when out of his range it would not require any armour at all, and conversely if a tank had armour of such a thickness as to be immune from the enemy weapon, then its own gun would only require to penetrate his armoured fighting vehicle at point-blank range, always supposing that engagements could be expected under such respective conditions. In actual practice the best attempt is made to approach this relationship at ranges, and under conditions, such as are likely to prevail when actions are fought. Whether it is desirable for any commander to allow his tanks to become

involved in a tank versus tank action if this can be avoided, depends upon the other tank-destroying facilities which he has at his command, which emphasizes the importance of self-propelled anti-tank artillery. It is unlikely that his tanks will be so superior to those of the enemy that he can engage them on a large scale without considerable losses, and under such circumstances it is obviously more economic to employ anti-tank artillery to destroy them, if this is possible. S.P. anti-tank guns will endeavour to engage under the same conditions as are desirable for any anti-tank guns, namely from a concealed and protected or partially protected position. The fact that they are armoured will enable them to reach such a position even though this may entail crossing ground swept by enemy fire, provided it is not covered by his anti-tank weapons; their cross-country performance will enable them to go over ground which would stop any wheeled equipment.

An attempt to produce any armoured vehicle will always fall short of the ideal in that so many factors governing design are contradictory. For example, the faster any A.F.V. may be required to be, in general the lighter it must be, implying the lighter must be the basis of its armour. A given type of armoured vehicle cannot necessarily be made faster by putting a more powerful engine in it. Such an engine itself will entail an increase in the total weight of the vehicle, as will also the increased area of armour required to protect it and the possible increase in size of the whole vehicle. As the engine itself will probably be larger, strengthened transmission and suspension will be required to transmit the greater power and to give reliability under the conditions of increased load and speed. Thus, unless the development of the vehicle is evolved patiently and carefully, the final result will certainly be more cumbersome and may even be slower than the original. This does not imply that constant development is not possible, as the limiting factors are always changing. For example, more compact engines with a better power/weight ratio may become available, and this will at once make possible A.F.V.'s of better performance. High grade alloy steels may be produced to give armour of greater immunity without increase of weight, although in this connection it may be interesting to note that limitation of supply of certain materials may impede development in spite of the general acceleration which takes place in war-time.

To return to the more detailed considerations governing the design of S.P. anti-tank equipment, the gun is the all-important factor and this must be suited to the purpose for which it is intended, namely to penetrate the heaviest armour which the enemy is likely to be able to mount on his A.F.V.'s at ranges at which they are likely to be engaged. This will at once place its limitations upon the design of the vehicle, depending upon the weight and size of the piece itself and those components immediately connected with it, such as its cradle, buffer and recuperator. The question of the weight and bulk of ammunition to be carried and the space required for the crew necessary to man the gun must also be considered. Owing to the complexity of the problem it is unlikely that the first equipment to be produced to carry any given anti-tank gun will be ideal. The vehicle itself may possess greater limitations than necessary, in which case it may be capable of immediate and considerable development, or on the other hand its capabilities in some directions may prove better than expected and it may be possible by careful improvisation to mount a better gun than that for which it was originally designed.

The development of new anti-tank weapons may necessitate the design of complete new vehicles; but, whether this occurs or not, it is essential from the

technical aspect of the vehicle alone that development should be continuous so that immediate advantage may be taken of improvements in the design of components such as engines and suspensions, and that qualitative superiority be gained and maintained over equipment employed by the enemy.

Of no less importance than the solution of the technical problems in the design of the equipment is the solution of the tactical problems in its employment, and the one may have considerable bearing upon the other. It is of the utmost importance therefore that those responsible for design should be kept in the very closest possible touch with the users and with all details of the tactical employment of the equipment in the field. It may there be discovered that some limitation previously regarded as of great importance, in fact matters but little once the troops are trained, and conversely other limitations of which the importance or even existence may not previously have been realized, may have a most adverse effect on the fighting efficiency of the unit, and limit the tasks which it can perform. Such a discovery may easily affect the whole trend of future development—a fact that was insufficiently appreciated, often with the most unfortunate consequences, in the early days of the present war.

To sum up the requirements of an anti-tank S.P. mounting, its development will depend in the first instance on the most important consideration, namely the gun which it is required to mount. This must obviously be the best and most suitable anti-tank gun available at the time of the design of the mounting. In the design of the mounting a number of mechanical limitations will apply, some directly consequent on the nature of the piece to be carried which will affect the weight and size of the vehicle, and some inherent in the design of any armoured mechanically propelled vehicle, such as the weight of its armour and weight and size of its principal components. A very great influence should, however, always be brought to bear on design by the most important characteristics which are required by the tactical role which the equipment will be called upon to carry out.

Characteristics of Self-propelled Field Gun Mountings

The problem of the design of a suitable field gun S.P. mounting is much simpler than that of the design of a suitable anti-tank equipment for two reasons; the first is that the design of the gun to be mounted is far more stable, and the second is that the requirements of the mounting itself are far easier to meet. In the case of an anti-tank gun, there is the constant competition of gun versus armour, leading to constant development and re-design of the gun as the armoured protection of tanks gets thicker. The development of field gun design depends upon quite different factors, all of which tend to be far more constant. For example, it is always desirable that the field artillery H.E. shell shall have the maximum capacity for its filling and therefore the maximum destructive and lethal effect, but at the same time it must not be too bulky or too heavy, or ammunition supply and the handling of ammunition on the gun site and when actually loading will become a major problem, as well as the gun itself becoming too cumbersome. This does not mean that the development of field gun design should not and does not go on, but whereas there have been three standard British designs of anti-tank gun in British service, namely the 2-pdr., 6-pdr. and 17-pdr. during the present war, there has only been one standard design of field gun, the 25-pdr. gun-howitzer, apart from the 18-pdrs. and 4.5-in. howitzers, then already obsolescent, with which most field artillery units were equipped at the outbreak of war. It can therefore be assumed, when

designing a field S.P. gun mounting, that the gun is unlikely to alter in the near future.

As regards the requirements of the mounting itself, all-round traverse for the gun is not essential, and traverse may be limited to within 20 to 30 degrees in either direction. This makes a turret unnecessary, which in turn does away with the constriction of the fighting compartment which is consequent upon the fitting of a turret ring. The hull of the vehicle can therefore be built more in the nature of an armoured box which, although it will not afford such a high degree of protection as the anti-tank gun mounting with its turret, will afford sufficient for a field artillery role. As no great weight of armour will have to move with the gun, which merely protrudes through the front of the fighting compartment protected by a comparatively light form of mantlet, the assistance of power for traversing should be unnecessary. The design of ammunition stowage also becomes far simpler when the crew are to remain in approximately the same relative positions to the vehicle all the time instead of moving round through 360° with the gun.

The development of field artillery S.P. equipment depends principally, therefore, on the evolution of the vehicle itself. Increased reliability and better performance, both across country and as regards long distance movement by road, will become possible; and constant development in design of S.P. field artillery equipments should always continue, in order to take full advantage of these factors.

Conclusion

In order to obtain and maintain technical superiority over equipment used by any enemy in time of war, or possessed by any potential enemy in time of peace, technical development of self-propelled mountings, as of all other highly specialized equipment, should be continuous. Inevitably in peace this development is slower than in war, as neither is the same expenditure likely to be sanctioned (and without ample funds development of any relatively expensive equipment must suffer severely), nor is the same pool of technical and inventive skill likely to be available, as many of those engaged on the development of Service equipment in war time will return to more peaceful pursuits in more normal times. On the other hand, the evolution of equipment for the armed forces will suffer from the same effects in all countries; but notwithstanding this it should be continuous as far as is possible even though it may be slow. Only thus will the potentialities of new developments in other closely allied fields be recognized and full advantage be taken of them. For example, the alteration of limitations imposed by current engine design, with the development of new types of power plants for any self-propelled vehicles, may open up new possibilities for self-propelled gun mountings. Just as tanks are expensive to build, so also are self-propelled gun mountings, and it is neither possible nor desirable that these should be in continuous large-scale production; but whenever a major development of either takes place, sufficient of a new type incorporating all developments should be produced in order to enable a full-scale trial to be carried out in the hands of the troops. Only thus will possible weaknesses be discovered and the country be in a position to go into large-scale production of the latest and most suitable type whenever the need may arise.

In the past all British development has tended to be hampered by giving undue importance to outside factors. For example, it was long accepted that it was no use developing a heavier A.F.V. than existing bridging equipment could carry. This is, of course, ridiculous. The bridge is designed to carry the Army's

equipment and not vice versa. Due consideration should always be given to problems of transportation likely to arise from a great increase of weight or size of any equipment, but this should never preclude development in any direction. In this respect German development has been much less hampered than British, in that the enemy has recognized the fact that, if a heavy tank such as the Tiger or an S.P. mounting such as " Ferdinand " are desirable, bridging and transportation problems should not be allowed to preclude their development. It is most likely that " Ferdinand " will prove not only too cumbersome in battle but also impossible to produce in sufficient numbers to have a decisive effect on any campaign, which is an aspect which must always be considered. On the other hand the moral effect of the introduction of this equipment has been considerable, and it was probably well worth a trial in battle.

Revolutionary lines of development in S.P. mountings, as well as in other equipment, should never be condemned just because they are new or because considerable modification may be necessary before they are of use. For example, it is postulated that an anti-tank gun mounting should have an all-round traverse, which is now effected by the use of a turret. On the other hand, if an easily operated steering control to swing the whole vehicle could be developed, the gun could be traversed by this means, accurate laying then being finally effected by a limited manual or power-assisted traverse. If the necessity for a turret could be avoided in this way, many severe limitations of the equipment would disappear. Considerable development would be necessary to obtain an effective form of steering control for this purpose, and there are inherent disadvantages in that the engine would be required to be running continuously whenever the gun was in action, and that the type of ground might alter the effectiveness of the steering control. It might, however, easily be found that these disadvantages were more than offset by the removal of the very severe limitations imposed by fitting a turret.

As with all specialized equipment, therefore, whatever its purpose, it is essential that development should always be viewed in its true perspective, the correct relative importance always being given to every limiting factor, whether inherent in the design of the machine itself, as is the case with those limitations imposed by its components, or whether consequent on the development of other equipment used in conjunction with it, such as bridges designed to carry it. At every stage, however, it is of overriding importance that development should be carried out along the lines which will ensure that equipment has the maximum effect on the conduct of any campaign when in use, and for this reason its development can never be divorced from the tactics used in its employment, and the closest possible touch should always be maintained between designers and the actual users in the field.

STAFF TRAINING FOR TOTAL WAR

By Lieut.-Colonel R. S. Little, M.B.E., R.A.

THE present conflict is now properly regarded and described as "total" war. There is no part of life and no place in the world which is unaffected by the struggle, though the fighting may be thousands of miles distant. Nations actively engaged in hostilities have all realized, some rather later than others, that if the War is to be waged successfully it is necessary to co-ordinate every phase of national life and to weld both civilian and military services into one powerful machine. (The term military is used in its broad sense, covering all armed forces, and not in the narrow sense of Army affairs only.) The realization that the armed forces, the civilian population and industry are interdependent has grown steadily, and with this understanding has come into being a multitude of committees—military and civilian, served by an ever-increasing number of liaison and other staff officers.

There is no fundamental difference in the operation of a civilian or a military committee, though detail procedure will vary; and both, to be successful, have need of the best trained staff officers that the country can produce. If a committee consists of, or is served by, partially trained men, it will become a menace to the whole machine, which cannot afford to work with weak links. The staff officers we have at present are men of varied and frequently wide experience, and many of them carry out their duties admirably. But it is certainly true of them to say that very few have been specifically trained in the working of this total war machine.

Military Staffs

Britain has for long years clung to the belief that wars can be won by professional Services, and it has been considered that, if we vastly increase their numbers when war breaks out and provide them, eventually, with equipment, then the war will be settled with a minimum of disturbance to civilian life. This dangerous attitude has brought us nearer to disaster with each successive war and there is some sign now of an increasing general interest in the military problems that beset a country when war breaks out. In fact, many men in all walks of life have realized under pressure of events in this struggle that the nation's final capacity for making war is greater than the sum of the efforts of its individual resources and services.

Attention has been directed in particular to the complete interdependence of the three armed Services and their need for the closest possible staff co-ordination. Apart from tactical problems on the field of battle, it is necessary to find some way in which priorities may be discussed and decided in relation to the total belligerent effort and not in relation to prejudiced and age-old traditions of seniority and service. Chiefs of Staff committees and sub-committees have been formed and have operated with success, but many of the officers who serve on them have insufficient all-round experience and have prejudices which die hard, so that the results of their deliberations may well be compromises rather than clear-cut decisions giving the best possible answer to the problem raised.

What is needed to operate the modern, and future, war machine is a large body of well schooled staff officers, versed in all the requirements needed for carrying out total war and capable of co-ordinating not only the armed forces, but also the scientific and industrial resources of the nation. This is a tall order, and one which cannot be fully satisfied at the present time, though greater co-ordination of the Staff Colleges is desirable and could well be achieved even under present conditions. However, no matter what we do or do not do during this war, we can and should

plan ahead to ensure that the staff officer of the future will be trained in the art of total war rather than in the narrow strategy of civil, sea, land or air war alone.

The Future Staff Officer

The efficient business executive and the efficient military staff officer have many characteristics in common, but only the military man is considered in this paper. Popular fancy is still inclined to think of the gilded staff as gentlemen with braid and red bands who have influence in high places and who have successfully wormed their way into a soft job far from the firing line. There have been such individuals in the past; there are some such at present, and there may be others in the future, but they are a dying breed. The staff officer to-day must have carried out his tour of operational duty with troops, so that he has practical experience on which to base the orders he writes and the plans he makes. He has two main responsibilities. The first is to his commander, whom he must serve loyally and to whom he must give clear, accurate, truthful and forceful advice. The second is to the troops who fight the battles. They must be directed, positioned and supplied in such a way that they can carry out the orders of their commander with the least possible delay and loss.

To fulfil these responsibilities the staff officer must, above all, know his job supremely well. It takes a long time to learn to write clear orders and to realize the implications of new plans made at short notice before or during the battle. The tempo of war to-day is fast and there is no time to try to learn the essentials of a new job while the battle is on. So the staff officer must be well and completely trained before he handles formations in battle. With knowledge at his disposal he will develop the calm unhurried manner which is one of his most necessary characteristics, particularly if things go wrong. His knowledge of military affairs must be a broad one. He will be waging cubic war in battle, a vastly harder problem than was linear war, and one which will demand a full and general understanding of the sea, land and air arms and the tactics and weapons that they use. He will be a specialist in one branch himself, the one in which he serves his operational tour of duty, but he must also know a great deal about all other branches. He will often form part of a combined staff with Allies and so he must study the methods and organization of our Allies at the time, together of course with the methods and possible action of the potential enemies we may have to fight.

In addition to his military knowledge the staff officer must have some knowledge of propaganda, economics and civilian affairs. With increasing educational facilities, the fighting man of the future will have to be given more factual information about his country's effort than was his brother in the past. His morale will be more subject to fluctuation and increasingly he will need to be convinced of the rightness of the cause for which he is fighting and of the reasons for the sacrifices and hardships he is called on to bear. In foreign countries the staff officer will need also to understand the methods of civilian affairs more than in the past. Even to-day, to take one example, the Passive Air Defence of a captured town is one of the first things that has to be organized and it is a military responsibility to see that it is efficient.

Finally, the future staff officer must appreciate the importance of science in war. He must understand that the success or otherwise of his country will largely depend on keeping ahead of the enemy in development. He must not look askance at the arrival in his headquarters of a long-haired, red-tied individual who does not conform to any known pattern of life. On the contrary, the staff officer must

collect information and ideas from all possible sources, sift them as best he can and then pass them on to the scientist. The staff of the future will always have scientific advisers at hand to assist, and the staff officer will have to play the part of the practical man. He must weigh the advantages and disadvantages of new developments on production and tactics to see that continuous modifications do not completely hold up the production machine and yet, on the other hand, that we do not fall technically behind the enemy. Given the essential minimum quantity of any weapon, quality is of greater comparative value than bulk production.

At the Battle of Waterloo the Duke of Wellington gave his famous order, "Up Guards and at 'em," with his own voice. That would not be possible to-day. The commander must now sift the facts and evidence produced for him by his staff, make his decisions and then leave his trained staff to put the plan into execution while he looks ahead into the future. If his staff officers are efficient he will have a good chance of becoming a successful commander, but if they are inefficient nothing will save him and his forces from eventual destruction.

The Staff Colleges

Up to the outbreak of war each Service trained its own staff officers. There have been separate Naval, Army and Air Force courses, at home and abroad, running for periods of one to two years. In the case of the Army, entry to the Staff College was by examination and candidates came from all branches of military life. The syllabus for each course was naturally planned to suit the ideas and requirements of the Service concerned and only for about one week did the officers of all Services meet together to study a combined problem. Even then they acted as specialists in their own Service and did not consider the problem generally as staff officers of a British war machine; they were trained as individuals of Naval, Army or Air Force staffs, absorbing the inherent prejudices of their kind. Some higher commanders and staff officers went through a course at the Imperial Defence College, where the problems of Empire defence were studied in all aspects, but their numbers were small.

On the outbreak of war in September, 1939, all Services found themselves short of officers, and staff training arrangements had to be considerably modified. The Imperial Defence College and the Naval Staff College closed.[1] The other Services shortened their courses to three to five months of high pressure work, thus increasing output, and the Army course was considerably enlarged in intake. Naturally this meant that still less time was given to combined staff study. It is true that Army and Air Force officers have attended each other's courses, instructors have been interchanged, and some lectures and problems are also included on each course to bring in the other Services. The time given to such study, however, has been haphazard, varying according to the individual ideas and opinions of the commandants and instructors of the time. Only in one case, in the Middle East, have full courses of Army and Air Force officers lived and studied problems together, and even in this case they have been attending separate courses of different lengths, not a completely integrated course which would train staff officers capable of filling either Army or Air Force posts.

It can be seen, therefore, that each Service has continued during this war to teach its own organization and requirements instead of the broader principles of total war. The result has been that many staff officers have found themselves

[1] The R.N. Staff College re-opened with a much reduced course for R.N., R.N.R. and R.N.V.R. officers in September, 1943.

almost entirely ignorant of their fellow Services when they have been called upon to plan a combined operation; and it is as well to remember that our military effort almost always consists of combined operations. Officers have found innumerable variations in staff procedures and organization and they have had to waste time learning facts, which should have been basic knowledge, and in dovetailing divergent methods of carrying out staff duties.

Speed is an important factor in achieving success in war and it is certain that some of our operations would have been planned and organized more quickly and efficiently if commanders had had at their disposal a body of staff officers trained to a standard staff procedure and knowledge of the requirements of all Services. The experience we now have has been gained at a considerable cost of time, lives and equipment, much of which would have been obviated if staffs had been fully trained beforehand for total war.

A Common Staff Duties Procedure

Von Clausewitz maintains that "friction," which is anything that tends to clog the wheels of the war machine, is an important factor in war operations. The present diversified Service methods of organizing staff work and writing papers and orders are a source of friction and one which should be eliminated in the future. There is no reason why the three Services should not write their appreciations, orders, messages and letters in a standard way; nor is there any reason why their office routine and filing systems should be quite different. In this war we have had considerable experience of combined staffs, and it should be comparatively simple to work out a common staff language for the future staff officer to learn.

It may be said that the Navy, Army and Air Force operate under different conditions and that by now each has built up the procedure which is best suited to its needs. This may well be true of minor detail, but the broad requirements of every staff officer are the same, no matter where he serves. He must have an office and files, together with statistical and planning records. He must have a medium through which he can quickly write clear appreciations, orders, messages and military papers of all kinds. We should therefore set up a committee now to examine the existing methods of staff work, to take evidence of Service needs and then to produce a language and procedure which should be made standard for all staff work. Such a grammar of staff duties would become the basic text book for all Service schools and colleges.

Syllabus for Staff Courses

So far it has only been suggested that the staff officer should learn a basic procedure of staff duties and that he will in future require much greater knowledge than in the past. His training should be divided into three Parts. Part One, or Basic Training, should last for four months, and the syllabus should consist primarily of staff duties. In addition the general organization of the civilian and Service departments would be taught. During Part Two, which should last for four to six months, and consist of specialized training, the Army officer would learn Army tactics and organization in detail; the Air Force those of his own Service; and soon. Part Three, or Advanced Training, would continue where Part One left off, by study of the strategic and tactical considerations of total war. The propaganda, scientific, historical and economic aspects of war would be dealt with during the year devoted to this part of the course.

During each of these parts of the staff course, work would consist of lectures, individual and syndicate exercises and discussions. The exercises in Part One would be on staff duties, those in Part Two would be specialized naval, army, or air problems,

and those in Part Three would be complicated syndicate tasks embracing all aspects of total war planning and tactics. Every officer would be taught to handle sea, land and air problems with equal facility.

The syllabus should be designed throughout to allow the maximum possible time for study and writing original essays and papers. During Part Three there should be discussions in which members of the Government, Civil Service, scientists and industrialists should take part.

Having finished this course of eighteen to twenty months, students should be attached to Services and branches other than their own for a period of four to six months for practical experience of other arms. The officer with only operational experience would discover just what problems have to be met by the administrative officer and vice versa, and each Service would have a chance to experience the practical difficulties met by the others in carrying out orders.

The aim throughout should be to conduct study on a university rather than a school basis and to allow as much freedom of expression and development of individuality as possible.

A College of War

It remains now to consider where and how these courses should be run. The present Service Staff Colleges in this country should be replaced by an entirely new College of War, which should become the University of the Armed Forces. In time this College would build up a new tradition, and the narrower Navy, Army and Air Force loyalties would be replaced by a pride in and allegiance to this Alma Mater. Its graduates would become the leaders and staff officers of the country in time of peace and war.

The College should be built expressly for this one purpose. It should consist of blocks of main buildings, where Parts One and Three of the Courses would be held. It would not necessarily contain facilities for Part Two, which could well be held in existing buildings in other parts of the country. It should be near London so that liaison with Government Departments would be easy to maintain.

Entry to the College should be decided by record of service and interview. All officers must have reached a certain standard of military education before they were considered as candidates. There should be an upper age limit of 35 years of age for the normal Courses. The military students should be drawn from all arms of the Services, together with Dominion, Colonial and possibly Allied representatives and they should be of the rank of Lieutenant-Colonel or its equivalent. Special courses would also be run as refreshers for politicians, civil servants, higher commanders and staffs.

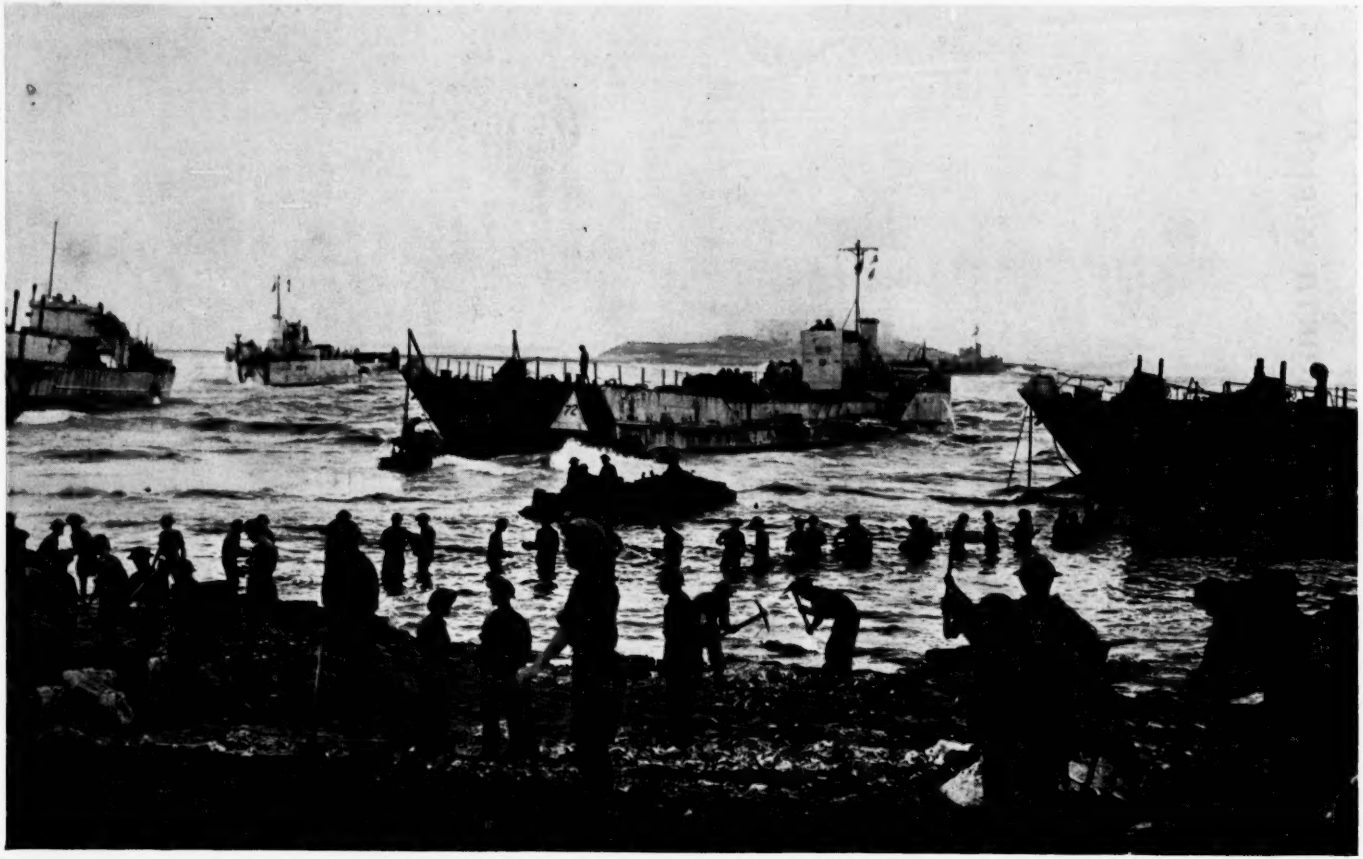
The task of this College should be threefold. First it should run general courses of the kind discussed above, in which both civilians and Service officers would study problems together. Secondly, in conjunction with the Directors of Service Departments, it should revise and produce military manuals and text books. Thirdly, it should act as a general research body for military affairs. Officers should be permitted to join the College for a period for original research work, and new strategic and tactical ideas should be studied in discussion, courses run for higher commanders and staffs, politicians, civil servants, scientists and industrialists

It should be the aim to make this College of War the centre of our national military life. It would be able to train a large body of staff officers for the exacting requirements of total war and, by acting as an intellectual centre for military thought, its existence should prevent the neglect and stagnation which normally overtake our armed forces in time of peace.

From an Official Photograph

THE NORMANDY BEACH—1944

TANKS LANDING; GERMAN PRISONERS EMBARKING



From an Official Photograph

THE HIGHLAND DIVISION UNLOADING STORES ON A SICILIAN BEACH—1944

THE NAVY'S PART IN THE NORTH AFRICAN CAMPAIGN

By CAPTAIN R. M. DICK, C.B.E., D.S.C., R.N.

On Wednesday, 22nd March, 1944

VICE-ADMIRAL SIR ALGERNON U. WILLIS, K.C.B., D.S.O., in the Chair

THE CHAIRMAN, in introducing the Lecturer, said: It is my privilege to introduce the Lecturer, Captain Dick, who is going to tell us about the Navy's part in the North African Campaign. There are few better qualified to talk about this subject because Captain Dick, as a Commodore First Class, served as Chief of Staff to Sir Andrew Cunningham, not only during the Campaign but during all the preparation and inception of it, and I feel sure you will be very interested to hear what he has to tell us.

LECTURE

THE Navy's Part in the North African Campaign is a very large subject, and it would not be possible to cover it fully in a matter of 45 minutes or so. I can, therefore, deal with some only of its aspects, so where there are omissions it will not be due to any lack of appreciation of particular efforts, but merely to the limitations of the time at my disposal. In these days, too, one has not the opportunity for careful preparation and access to records, therefore I shall deal chiefly with matters which came directly within my own experience. For instance, I shall have little to say on the detailed side of the naval work carried out in the Eastern Mediterranean and nothing at all about the brilliant operations off Casablanca and the Moroccan coast by the United States Navy. They were an integral part of the naval effort, but they are a story in themselves which I hope you may hear in its proper detail one day.

In alluding to the naval effort, throughout this lecture I shall not differentiate between the British and the United States Services. This is as it should be for we were one team. As it happens the period under review is that when the warship effort inside the Mediterranean was almost entirely British except for a good proportion of U.S landing craft; but by the time of the Sicilian landings a formidable American naval force had joined up. I sometimes feel that it is not sufficiently realized at home that the Mediterranean naval command includes a U.S. fleet of cruisers, destroyers, minesweepers, patrol vessels, coastal forces and assault shipping and craft. I feel particularly anxious to stress this after fifteen months of the closest contact and happy working with the command of the U.S. naval forces in that area.

There are two main categories into which naval operations fall:—

(1) Those where the object is to *gain* control of sea communications.

(2) Those required to *exercise* control of sea communications.

This campaign offers as clear cut an example as one could wish of these types of operation. It also brings out what I trust is now almost axiomatic, namely, that operations of war are a function of all the Services working as a co-ordinated whole. Gone are the days when an Admiral could sail off to sea on his own affairs and disappear apparently without trace until he returned bringing, as the landsman would hope, victory in his train, or as the less respectful often said, prize money in his pocket. Gone, too, are the days when a General could write to an Admiral

" I do not wish to be entangled in any co-operation." What was accomplished by the Navy in the Mediterranean campaign would not have been possible without the backing of air power, even though initially it was exercised from the sea, nor could that air power in its turn have operated effectively had not the ground forces pressed forward to seize those bases from which the air was to exercise so vital an influence in the development of operations.

I would ask you to cast back your minds to the situation as it was in August, 1942. You will remember that for many months the Mediterranean had been closed save for sporadic and gallant adventures which, at considerable cost in men and ships, had kept the heart of the island of Malta beating. But the heart beats were slowing rapidly and all too perceptibly, for the enemy had either in his possession, or as so-called " neutral " ground, both the North and South shores of the Mediterranean and, in consequence, air bases which allowed him to exercise a virtually undisputed control of the air over the comparatively narrow waters of the Mediterranean sea.

Now it has often been said that it is the nation which controls the Mediterranean that will eventually win a European war. At the risk of seeming partisan in the matter, I submit that the history of 1942 and 1943 will bear out the truth of this statement and that our strategy in opening the Mediterranean before all else was as basically sound as that, say, in the Pacific where similar foundations of victory are being successfully laid.

In order to open the Mediterranean it was necessary to obtain air bases. To obtain air bases it was necessary to secure a coast line. From the East we could launch our attack from the springboard of Egypt, but from the West the Atlantic Ocean and the Bay of Biscay lay between us and our goal. Our problem, therefore, became first of all that of gaining control of the sea communications in the Western Mediterranean, for from that would follow the possibility of obtaining air bases which in turn would allow further control of the air and thus permit warships still further to clear the Mediterranean waters.

PLANNING

It was in this conception that the initial operation against North Africa was launched. The problem was a considerable one, complicated by the implacable factor of time. For a variety of reasons it was terribly late in the day before the final decisions could be made on which planning could start. Thus from the inception of the campaign we were faced by this inexorable race against time because of three factors :—

1st. The weather factor. It was essential to get landing craft to the Mediterranean while conditions in the Atlantic and the Bay made this possible.

2nd. Malta. It was becoming evident that the saving of Malta was already a question of weeks.

3rd. Surprise. Unless there were the utmost speed and secrecy in planning and execution, there was the grave danger that the Axis might forestall us and enter Algeria and Tunisia first.

It was in this connection that an important lesson was learned, namely the vital importance in amphibious operations of ensuring that the top level planning is firm at the earliest possible moment. This is because even a small change in an essential has unbelievable and ever widening repercussions right down the scale, often quite out of proportion to the original change. For instance, if ships or landing

craft are loaded to disembark on a certain beach and that beach is shifted to one, say, two miles away, the whole basis on which the loading was designed may be upset. Each ship or craft may have to be completely unloaded and reloaded which, in itself, may take many days and which cannot start until the replanning is complete.

This race against time was the cause of many imperfections in the plan, but such imperfections had to be accepted with eyes open in order to gain the outweighing advantage of speed. In particular the training of landing craft crews was below that which the commanders would have wished; but this was accepted, albeit with anxiety, because of the fact that the longer we waited the greater might be expected to be the opposition, whilst if surprise were achieved the opposition would be relatively unprepared and unco-ordinated. It was, in short, a calculated risk which in the event was justified.

Another handicap lay in the fact that the expedition could not be mounted as a whole from the United Kingdom. After much discussion it was deemed essential to secure a base in Morocco at the same time as the landings in North Africa, in case things should go awry with the Mediterranean expedition. It needs no elaboration on my part to stress the complications as regards time in planning when a vast expedition is mounted partly in the U.K. and partly in the U.S.A. Even though the two portions were kept as independent of each other as practicable, yet each remained an integral part of the whole.

A further and grave consideration lay in the weather conditions on the beaches. It was computed that whereas in October and November we might hope for suitable conditions on one day in four inside the Mediterranean, off the Moroccan coast these conditions would obtain only on one day in twelve. I will leave it to mathematicians to work out the chances of good weather in both areas simultaneously. But mathematics do not always give the right answer, and on the night of 7th/8th November, 1942, perfect conditions prevailed in Algeria and reasonably good conditions in Morocco, although it has to be admitted that a rapid deterioration followed.

But one could catalogue the problems indefinitely. The necessary assembly of landing craft in Gibraltar before the weather broke, the vast collection of aircraft on North Front at Gibraltar parked wing-tip to wing-tip over a great area with barely room to land and take off, these and many other similar headaches made the retention of secrecy appear almost impossible. Still, somehow it was done by shift and contrivance which make a story in themselves.

What made all this possible? The answer lies I am sure in the success of a great experiment in the form of an integrated Allied Headquarters. Of course there were just the same arguments and, indeed, real rows as you would get if you were conducting an operation with entirely British or entirely American personnel—it would have been very unhealthy if that had not been the case, but I am trying to convey that it was all within the home if one may use the expression, and when you realize that two nations and five Services were involved, how vital this state of affairs was to success needs little emphasis. I have made reference to this point because it was the very foundation stone of the whole campaign. Much has since been written and with complete truth of integrated Allied Headquarters in North Africa, but I am talking now of the birth pains.

I feel that it is presumption on my part to refer to what we owe to General Eisenhower in this respect, but if I say that we owe more than we can easily express to his leadership in welding the weapon of the North African expedition, it is only

to repeat what is the conviction of every one of us who were privileged to serve under him through those months.

But to return to the more strictly naval aspects. It has to be remembered that the Naval Commander-in-Chief had a potential fleet against him of considerable size. There was at that time no certainty, though great hopes, that the French fleet would not be involved. In consequence, our dispositions had to take into account not only an Italian fleet of 6 battleships, 8 cruisers and some 25 fleet destroyers, but a possible attack from French forces of similar strength, of greater efficiency and far greater determination, based, moreover, much closer to our objectives. This factor was the cause of much thought, for the Commander-in-Chief had to decide between the wish to supply the maximum support to our landing forces, both in the way of gunfire and of seaborne air support—which it must be emphasized was the only air support that could be used until Algerian airfields had been seized—and the necessity for ensuring that our control of the sea in the area of operations remained unchallenged or, if challenged, that it should remain unbroken. Both these requirements needed all possible carrier support. Without going into details on this point it will suffice to say that the Commander-in-Chief's view was that to gain control of the sea was the primary object—if we once lost that we would lose everything. The main forces were therefore disposed so that they would be in a position and in sufficient strength to deal with the Italian Fleet in good time should it move westward. It was a fortunate circumstance that in so doing our Fleet was also reasonably well placed to meet any threat from the South of France. This decision did, of course, involve a reduction in the number of our precious carrier-borne air forces and of our bombarding forces to be allocated to the support of the landings, but special orders were given so that carriers could be detached if the enemy was passive.

The preliminary round was unusual for, it will be remembered, contact with the friendly elements in North Africa was made by the landing of an American General, a U.S. Navy Captain, and other U.S. military and civil affairs officers on the French coast from a British submarine. Surely as an example of combined work this is typical of the integration to which I have already referred. I have unfortunately to record that inter-Service co-operation became slightly strained when the party, having had their meeting place raided and having hidden all night in the bushes, was trying to re-embark in a rubber boat in a considerable swell. The boat overturned and the paddles were disappearing to leeward. The Army officers turned with instinctive discipline to ensure that the General was all right. But the Naval officer, knowing both the toughness of the General and his height, appreciated the situation more quickly and shouting "Never mind the General, save the paddles," rushed in pursuit of those disappearing means of propulsion. That motto, I regret to say, suitably emblazoned, hung in our offices for many a day.

Only a short time later General Giraud was brought out of France in the same submarine and transferred half way to a seaplane. These two incidents were small in themselves, but matters of great import hung on their results.

COVERING THE APPROACH

After this overture came the movement of those great convoys from the U.K. and U.S.A. to the coasts of Africa, of which the most remarkable thing that one can say is that it passed off completely without incident. Naturally, it was a most anxious time: the presence of a number of submarines across the convoy routes was well known and before leaving for the Gibraltar Headquarters there had been

much consideration between the Admiralty and the Commander-in-Chief, Mediterranean, on how best to evade the menace. In the event, complete success was achieved, and the enemy missed all those vital south-bound convoys packed with troops and all that galaxy of military accoutrements so necessary to modern warfare on land, but which makes sailors think sometimes a little ruefully of the white knight in *Alice through the Looking Glass.*

It had been expected that the enemy would concentrate his submarines in and around the Straits of Gibraltar, and the bottom of the pan was scoured to obtain every possible aircraft and A/S craft to meet the threat. The results were remarkable. Not only were the initial convoys passed through unscathed, but though, as was to be expected, our losses became heavier once the enemy realized we were landing in North Africa, it proved possible to inflict such damage on his submarines that it took months for him to recover from the losses in that area. It has been assessed that between 8th and 15th November alone no less than 13 submarines were sunk in this comparatively small area. This figure takes no account of the possibles, probables, and damaged which were at least as many. In short, during this concentrated period, 4 submarines a day were being sunk or damaged. That pace was too hot for any submarine force in the world.

The Main Fleet

Meanwhile, under cover of Force " H " our convoys and their escorts duly arrived to time at their appointed positions for the assault. Force " H," it will be remembered, was the Force which had encountered those adventures in battling through to Malta to which I have referred. It was, therefore, already a tried and veteran organization, but for these operations it had, of course, been strongly reinforced and included four capital ships and three large carriers. In addition several of the new escort carriers were making their first bow in actual fleet operations. In effect, Force " H " was the spearhead as it moved in the van to take up its position between the enemy fleet and the North African coast. The timely arrival of the convoys was a source of satisfaction, as the Commander-in-Chief remarks in his despatch, since it ensured the co-ordination of units scattered initially from Scotland to Sierra Leone and from the United States to Gibraltar.

The secret had been well guarded and there is little doubt that the enemy misconceived our intentions and expected an attempt to force the Sicilian narrows. This gave us an invaluable respite from submarine and more particularly air attack whilst we were establishing ourselves ashore. It was doubly important because the weather turned against us the day after the landing. Furthermore, the Italian fleet remaining quiet and there being no sign of activity from Southern French ports; it was possible to put into effect what had been allowed for in the original plan, namely, to strengthen the carrier forces available in support of the assault at the expense of the covering fleet.

The Fleet Air Arm

The variety and range of the work performed by the Fleet Air Arm in these operations is of some interest, more particularly because one feels that we are rapidly approaching a period in the War when the employment of ship-borne aircraft will once again come into its own—in the Far East.[1] In the Mediterranean Campaign

[1] This anticipation was borne out when U.S. carrier-aircraft in force attacked the Japanese fleet between Luzon and the Marianas on 19th June, causing much damage and compelling it to withdraw.—EDITOR.

it was only for a short time that the whole of the air support was a naval responsibility because distances were relatively short; in the East the story may be very different. One likes to think that the scope of opportunity of the Fleet Air Arm is about to be widened since their opportunities have been relatively restricted of late. I feel we have almost forgotten the high achievements of carriers like the "Eagle," "Illustrious," and "Ark Royal," to mention only three from the early days, and of their magnificent ship's companies. In the initial landings sea-borne aircraft were liable to be called upon to carry out fighter protection of convoys, anti-submarine patrols, search and attack on the enemy battlefleet, air spotting, dive bombing of shore targets and tactical reconnaissance. In the event all these duties, except attack on the enemy battlefleet, were carried out as well as a number of others: it is a good example of how catholic must be the training of the personnel of the Fleet Air Arm.

One can only record a few incidents. An enemy shadower was shot down over the fleet on D–1 day. Just before the assault, the enemy was dropping flares over the battlefleet and carriers—a most unpleasant time to choose; however, no attack developed. On three occasions Albacores were called on to bomb different forts at Algiers, which was successfully done. One of these attacks was carried out to assist our destroyers which were breaking in to Algiers harbour and suffering from fire from a fort—an interesting example of air and surface co-ordination. At Oran a particularly effective and gallant attack was made by Albacores on La Senia airfield in which they destroyed no less than 47 aircraft on the ground and thus effectively prevented air opposition. It was in this attack that the leader of the squadron continued to dive to the attack in flames though he could have baled out, but he preferred to press his attack at the cost of his life. Meanwhile, the carriers were not being left alone and in one bombing attack a carrier was hit but, fortunately, not seriously. The battlefleet was also attacked in the evening of November 8th, but the attack was ineffective and fighters chased the enemy away. Another form of activity in these air operations was of particular interest, namely, the use of naval aircraft for Army tactical reconnaissance. A Fulmar squadron under the command of a Captain in the Royal Marines had been specially trained for this duty and was able to perform valuable and effective work. One aircraft in fact made a habit of landing near the troops to find out what they wanted and then taking to the sky again on a fresh mission.

As soon, however, as the airfields came into Allied possession, the U.S. and Royal Air Forces flew in and it was possible to turn over the shore-side duties to them. This was a welcome relief since it released the carriers from the unhealthy task of operating comparatively close inshore in areas which must by then have been well known to the enemy.

THE LANDING IN NORTH AFRICA

The story of the actual assaults in so far as it can be disclosed has been told already. It does not contain so many lessons as we were to learn in later assaults in Sicily and Italy since the landings were relatively unopposed. There were, of course, a number of technical lessons and the whole experience of the operation was invaluable. Supporting fire from battleships, cruisers and destroyers was employed, and this type of fire demonstrated its known limitations against fixed small shore targets. The weather played on our side for the vital twelve hours or so of the assault period and then deteriorated rapidly with serious results on the

rate of landing and expenditure of landing craft. Fortunately by then the capture of Arzeu and Algiers harbours had greatly eased matters.

Amongst notable events, there was the 120 miles voyage of 700 troops from the U.S.S. " Thomas Stone " to their destination in landing craft after the parent ship had been torpedoed. This was a result of the courageous decision of the Commanding Officer to send on his escort and boats to their objective and to accept that his ship would be left defenceless. It was all the more satisfactory that she made port in due course in tow of the British destroyer " Wishart."

I cannot forbear to mention also those gallant frontal assaults on Oran and Algiers harbours by the cutters " Hartland " and " Walney " and the destroyers " Broke " and " Malcolm." They failed in the end, but they were magnificent examples of courage and fortitude.

There was also the series of surface actions against individual French warships who sallied forth in face of hopeless odds, only to be sunk or driven back into port. These encounters were as one-sided as they were distasteful to our ships, but they served to confirm the courage and determination which existed, and still exists, in the French Navy and of which we shall surely see further evidence before very long, but this time as comrades-in-arms.

Throughout these actions Force " H " was holding the ring. It is always difficult to bring out the work of a fleet in being when it does not culminate in the dramatic climax of battle, but one cannot sufficiently stress how the whole of this great Armada disembarking on North African shores relied on those ships away to the North who were making an undisturbed landing possible ; and it was no pleasant job for them because there was always the threat of air and submarine attack without the stimulant of certainty of battle. Indeed it was more than a mere threat, and the Force suffered destroyer losses both by bombing and submarine attack in the days following the assault while they still maintained their vigil out of sight to the North. On 18th November, however, Mers-el-Kebir (Oran) became available as a fleet anchorage and so provided us with a forward base some 250 miles nearer the enemy.

Thus concluded the first phase of the landings in Africa ; but it was only the first phase. We had command of the sea in the Western Mediterranean ; now at all costs it was necessary to exploit to the Eastward. It had always been the Navy's wish to carry the initial assault much further East since it was felt that a force rushed in to Bizerta would have stimulated Tunisia to resist the Axis and there seems little doubt that this might well have been the case. However, " logistics "—that descriptive word, would not permit this project, although the Allied Commander-in-Chief and General Anderson, commanding the First Army, were equally alive to the need to get to the East. It was a minor tragedy of the Campaign that the gallant attempt of the First Army to reach Tunis should have failed and by so narrow a margin. Taking very great risks with slender forces and on the most meagre supply lines the attempt was made backed by support from the sea. It had been hoped to take Bougie within 24 hours, but on 9th and 10th November we were foiled by the weather which was too heavy for assault landings. However, by dawn on the 11th a brigade had been landed and occupied Bougie, without opposition, as it turned out. Within 24 hours, *i.e.*, at dawn on the 12th a similar landing was successfully made at Bone. Observing that Oran did not capitulate until p.m. on the 10th and the Armistice was not signed until the 11th, at which time the 8th Army was still as far East as Bardia, it will be appreciated that the move East

was not long delayed and that pretty big risks were taken. By 17th November we were in occupation of Tabarka—only 50 miles from Bizerta. But this was the high water mark so far as the coast was concerned.

By now the Germans were arriving by air and ship in Tunis despite our submarines and such few aircraft as we could bring to bear. A long range torpedo striking force would have been invaluable at this stage, but such luxuries could not at that time be spared from other theatres.

So ended the thrust eastwards at least in so far as the direct naval side of it was concerned. These results were not achieved without loss. The Germans, by now alive to our intentions, concentrated air forces in Sardinia and the harbours of Bone and Bougie were subject to a series of fierce attacks. To send large transports so far forward was a grave risk, but it was the only way of getting the men quickly to the key ports and aerodromes and on balance it was justified, since the troops were ashore for the most part by the time the attacks developed. But we learnt an important lesson, namely, that to seize an aerodrome and put fighters on it is not enough, it is the arrival there of supplies—petrol, aircraft stores and so forth, which is the determining factor of whether efficient air protection can be provided. I know this seems obvious, as indeed it is, but there is a tendency to give too little attention to the administrative side and to stress the capture of aerodromes as the end in itself.

From now onwards the campaign settled down into a more steady and routine course so far as the Navy was concerned. We had gained control of the Western Mediterranean and it became a question of exercising that control. What were the Navy's functions? I think they may be summarised as—

(*a*) Keeping control of our sea communications.
(*b*) Supply by sea.
(*c*) Maintaining the offensive at sea against enemy forces.

You will note that attack on the enemy forces comes last; this is only because it now seemed evident that the Italian fleet was unlikely to challenge the command of the sea established by Force " H " and, in fact, it became possible at this stage to reduce the strength of the force in view of other urgent commitments. Indeed, throughout the campaign, except for escorting his own convoys, I do not recollect the enemy once showing his nose in the fighting area except for some rather half-hearted work by " E " boats based on Sardinia and Bizerta.

As regards our first duty—the control of sea communications, this became really a matter of good air reconnaissance to keep an eye on the enemy units and strategic basing of our own units, so that they could be on the spot in good time if needed. As I have said, the Italians showed no disposition to interfere, and beyond one or two alarms our surface forces were not called on to defend our ships at sea against surface attack.

Attacks by air or submarine were more serious problems, but the establishment of a Coastal Air Force, sharing the same war room as the Commander-in-Chief, Mediterranean's staff, was an invaluable—indeed, essential, arrangement which never ceased to pay dividends. Time will not permit of elaborating on this matter, but we owe much to the close co-ordination of the two Services for keeping shipping losses to so low a level. Incidentally, U.S. officers and men formed a good proportion of the Coastal Air Force and lately there have been numerous French fighter units incorporated in it.

SUPPLY BY SEA

Turning to the matter of supply by sea which it must be remembered includes not only that of our own forces, but also civilian needs, imports and exports, coastal trade, and various other calls on transport by sea, I think it may be of interest to give you an idea of the machinery required for this complex organisation. It is a subject on which little has been written ; but a valuable technique was developed in the Mediterranean during these four-and-a-half years of war. A great part of the following remarks are taken from notes kindly supplied me by Captain T. M. Brownrigg, R.N., who has unique experience of the shipping problems in the Mediterranean as they affect the Navy.

Let us start with the problem of the Convoy Programme. It always seems that the Army, Air Forces and the civilian populations can never have too many supplies, and as in this Campaign the actual provision of ships was not stinted, the bottle neck became port capacity. Firstly, therefore, the Naval Staff in conjunction with their Army colleagues had to work out the *maximum* port capacity as regards berths for ships and then in tons per day. With this figure available the average turn-round of the various classes of ships—Store ships, M.T. ships, Personnel ships and Tankers—could be estimated. This then enabled an ideal convoy schedule to be worked out. Unfortunately the ideal was always difficult to obtain because (*a*) there never seemed to be enough escorts and (*b*) it was necessary for the Mediterranean Convoy Programme to be in phase with the Atlantic Convoy Programme.

After arriving at a theoretically ideal programme, therefore, a lot of thought and discussion had to be given to the production of a practical programme which would meet, as far as possible, the various requirements. Chief among those requirements were the following : First, there was the Army's need for flexibility so that any ship could be called forward immediately and all berths used for unloading without a break. (The Army's ideal is a convoy arriving and sailing from every port about 6 p.m. every day.) Secondly, there was the Shipping Board's requirement of the quickest turn-round of ships combined with the back-loading of return cargoes. Then there was the civilian authorities' desire to continue normal coastal trade. Again, it was necessary to regard the Port Authorities' urgent wish to avoid port congestion both for reasons of efficient port working and as a safety measure against bombing or the forced use of unprotected anchorages. Lastly, it was important to reduce the number of convoys so that each convoy could be adequately protected while still giving the escorts a reasonable period for engine repairs and maintenance. Even when the convoy programme was finally issued it was in practice found essential to amend and vary it as the fortunes of war fluctuated. For example, when the enemy air forces concentrated their attacks on Bone harbour, it became essential to turn round the big troop liners at Algiers and to ferry the soldiers forward in small, fast ships ; at the same time bad weather brought demands for all-weather airfields and it was necessary to pull out from Atlantic convoys for immediate convoy to Bone those ships whose cargoes contained steel matting for construction of fighter airfields.

It is obvious that a concomitant of the Convoy Programme is efficient port organization. From the naval point of view this has two sides : first, that of seaward defence ; and, secondly, that of port working ; which throughout the campaign at both ends of the Mediterranean has been of primary importance. In captured or occupied ports, the Navy has to provide the Harbour Master and most of the port officials (who in the Home Countries are civilians). In many cases the pilots

are naval officers, and in all cases the pilots are supervised by naval officers. Thus, the Naval Officer-in-Charge has to " run " the port, not only protect it.

Besides the problems of shipping movements and port organization, the Mediterranean campaign, added to the naval complexities the task of moving large armies and air forces by specially built landing craft and landing ships. Before the Sicilian campaign there were in the Mediterranean about 2,000 landing craft and ships which were necessarily distributed round nearly all the harbours of Africa and Malta.

Special mention must be made, too, of the shipping organization. The responsibility of a Naval Commander-in-Chief abroad for everything that floats on his station was early recognised, but its implications were not realised. After experience in the Eastern Mediterranean in 1940–42 we were able to start with more knowledge in the new campaign. On the Naval Commander-in-Chief's suggestion, a North African Shipping Board was formed immediately the expedition started. On this were represented all the authorities interested in shipping—Navy, Army, Air Force, Ministry of War Transport, Sea Transport Department, War Shipping Administration, the Service of Supply, Petrol Department, etc., and in due course the local service and commercial interests. This Board dealt with policy, shipping allocations and port working; sub-sections dealt with merchant shipping repairs, merchant ship stores, Merchant Navy welfare and with tanker movements. Each member retained his own responsibility, but worked generally to the lines prescribed by the Board or its off-shoots. Collective recommendations which required Command decisions were made to the Naval Commander-in-Chief and, if necessary, through him to the Supreme Commander.

I have discussed, at some length, perhaps, the organization behind the supply by sea because supply is one of the Navy's biggest contributions to the campaigns in the Mediterranean. The major effort is, of course, the actual services demanded of ships, officers and men in order to meet all the various requirements. But that is really just a part of the world-wide story of the exercise of sea power in war. When things go well that effort is a little apt to be taken for granted; but if I do not elaborate this aspect of the subject now, I am sure that everybody here to-day will realize the magnitude of the effort involved in the actual physical transference of these millions of tons of supplies from the United Kingdom and the United States to the Mediterranean. One facet of the work is, however, worth mentioning. The passage of convoys from Gibraltar to Bone and Bizerta is no short excursion. (From Gibraltar to Algiers is as far as from London to Leith. Similarly from Gibraltar to Bizerta is as far as from Portsmouth to Scapa Flow.) Now the whole of that lengthy passage had to be defended by our sea escort forces and their loyal helpers—the Coastal Air Force, against submarine, air or surface attack. If you compare the necessarily limited forces available in the Mediterranean to those along the coasts of the United Kingdom you will realise what great calls were made on these tireless little ships as well as the immense amount of often thankless and monotonous flying that was the lot of the Coastal Air Force. Their reward, however, lies in the fact that less than half of one per cent. of these many millions of tons of shipping and supplies was lost or damaged.

It is perhaps appropriate at this point to mention another naval activity since it is of vital importance to the safety of shipping, namely, the work of the minesweepers. Along so extensive a coastline and in the approaches to the few ports originally available the danger of mines was always a matter of concern. Minelaying

by submarines, E-boats and particularly by aircraft under cover of the continual air raids to which the forward ports were always subject, all had to be catered for. The modern mine is not easily swept up and the generous employment of anti-sweeping devices is a development which makes the task no easier and calls for time at the task and tenacity by the sweepers. I have not the time to give details of the work of the mine-sweepers, but it can be measured by their most spectacular achievement in sweeping and clearing no less than 600 miles of channel inside a month and clearing a route to the East through these thickly-laid minefields within nine days of the fall of Tunisia. No less than 300 mines were swept up during these operations alone. It has to be remembered also that the mine-sweepers are necessarily leading the van in every assault on the enemy-held coast.

THE OFFENSIVE AT SEA

The remaining naval task was the offensive against enemy forces and convoys at sea.

Initially this was not too easy. The enemy had almost completely blocked the Sicilian narrows with mines; he had a triangle of air bases in Sardinia, Sicily and Tunisia, and he still held all Cyrenaica. It is true that we succeeded in running the "Manxman" into Malta with supplies on 12th November, but an attempt to pass in two small merchant ships under cover of the landing in North Africa had failed and the ships had been seized and sunk as block ships at Bizerta. We were, of course, employing submarines extensively, and their work has, I understand, already been the subject of a lecture here, so I will not elaborate on it. However, as our forces became better established and as the 8th Army moved West, the pressure on Malta relaxed, for the enemy's air forces had to concentrate on the Tunisian battle.

So, in due course, Malta was relieved and able to play an increasing share in the offensive; a force of cruisers and destroyers was established there and at Bone. The performance of these forces was invaluable for, apart from the losses they inflicted, they forced the enemy either to risk the night run across the Sicilian narrows and probable annihilation, or to try it by day under threat of constant air attack. It was not a pleasant choice for him. The names of such ships as the "Aurora," "Penelope," "Dido," "Cleopatra," "Sirius" and "Orion" to name only a few, and the squadrons to which they belonged, must have loomed as harbingers of disaster in the enemy's eyes. Again and again they and their destroyers got into his convoys with devastating effect. These two forces played battledore and shuttlecock with the Axis who never knew from which direction attack would come. Moreover, a passage from West to East having been established, either force could find a base by making for the opposite port if the dark hours were insufficient.

Their efforts were of course backed by air bombing and fighter cover, and valuable work was done by a F.A.A. torpedo squadron stationed at Bone. Coastal Forces were also established at Bone and Malta and the game of harrying the enemy convoys was entered into with considerable zest. The enemy was thus hit well and truly whenever he could be got at. From our most advanced base at Tabarka landing craft carried out harassing raids with Commandos and forward troops were kept supplied.

The story of the work of the coastal craft is a saga in itself. This force, moreover, consisted not only of our M.T.B.s but also of United States' P.T. boats which had arrived in the Mediterranean and were desperately keen to get into the fray. Night after night these light craft from Bone, Tabarka or Malta swept right into the entrances

of Tunis and Bizerta or up the coasts from Sousse and Sfax to Cape Bon. Their exploits are too numerous to retail. A typical incident was on 31st March when four M.T.B.s sallied out from Bone. One broke down and one lost company due to a man overboard. The remaining two attacked three merchant ships escorted by destroyers and " E " boats in very heavy weather. Two ships they hit and destroyed, but not content with that, they tried to drop depth charges ahead of the destroyer escort. Then in the force of a full gale they started back for home. Somehow or other they limped in to Tabarka nearly battered to pieces but having done a good night's work.

Perhaps the most gallant story was that of Lieutenant Gould, Royal Navy, and his audacious voyage right up to the East coast of Tunisia round Cape Bon and into the Bay of Tunis in broad daylight, wearing German colours until he had successfully deceived the enemy. This fruitful expedition caused panic and alarm all up that coast, but the cost was heavy as Gould was mortally wounded. In the final phase the coastal craft collected no less than 200 prisoners and it was an M.T.B. that first entered Bizerta harbour—a bit too early, unfortunately, as the enemy had not left and provided her with a warm reception.

Minelaying was also an important offensive measure and notable operations were carried out by high speed minelayers such as the " Abdiel," " Welshman " and " Manxman," and by submarines. This branch of the trade is necessarily always rather shrouded in mystery, but it is nevertheless obviously a job requiring boldness and skill. These ships are always cats that walk alone and it is this very solitariness on their operations which adds to the strain.

And so the months passed while the bitter fight went on in Tunisia through the Winter and into the Spring. But the end was in sight. By March the Eighth Army was driving North and the First Army East. The constant pressure on the enemy seaborne supply line was beginning to tell. If he sailed by day the Fortresses blew him to bits at sea or in harbour ; medium bombers skipped bombs into him ; submarines attacked him ; or he blundered into our minefields. At night he was liable to find himself attacked by M.T.Bs. off Marittimo, or he would meet cruiser and destroyer forces from Malta or Bone on his way across and get a final dose from M.T.Bs. in entering Bizerta Bay or the Gulf of Tunis. It is not surprising that the Italian seamen called this run the " death ride." The effect inevitably was that supplies became more and more scanty, the harbours of Tunisia and Sicily were a shambles, our armies closed in and it became evident that the enemy was going to crack.

The natural question arose in every mind would he try and " do a Dunkirk " ? We all hoped he would and the Commander-in-Chief issued detailed orders for that contingency : difficult orders too, for the airmen were after the prey as well and a good deal of discussion, and hot discussion, went on concerning how to give both air and surface forces a free hand without their destroying each other. In the end it worked out fairly well.There was a certain amount of mutual shooting at friends but very little considering the conditions. On one occasion a destroyer was bombed by our own aircraft and the C.O. informed the aircraft on R/T exactly what he thought of them in general and their ancestry in particular. This brought a surprised " Boys, he's friendly " back over the R/T and identity was established. Equally on occasion ships engaged friendly aircraft. But in one sense the operations were a disappointment. The enemy had learned his lesson as regards Spring Cruises in the Mediterranean. By that time we had control of the air and our surface forces

could operate with impunity by day in the Sicilian Narrows. Day and night we had the M.T.Bs. close inshore; outside them destroyers; and backing up, in the middle of the Straits, came the cruisers. The word had gone out " they shall not pass," but very few tried and that is, I think, no small compliment to our command of sea and air alike remembering that a major fleet was still in being a day's steaming away. In the event, some thousand prisoners were captured at sea and a number of craft sunk and that was the extent of the " Dunkirk," but what matter for, unlike Dunkirk, close on a quarter of a million Axis prisoners were in the bag in Tunisia.

And there I must end. The 12th May saw the close of the North African campaign. Within nine days our minesweepers had swept a route through the minefields, and on the 21st May the first through convoy passed Cape Bon on its way to Alexandria. The Mediterranean was open!

The most spectacular fruits of the victory were still to come. Sicily and the lodgment on the mainland of Europe were to follow until the final act of the naval play was reached and the Commander-in-Chief, Mediterranean was able to inform the Admiralty that " the Italian Fleet is now anchored under the guns of Malta."

THE CHAIRMAN

If there are no questions it only remains for me to sum up. I am sure you will agree with me that Captain Dick has given us a most interesting lecture. I believe this North African Campaign will be handed on as a model of clear thinking in its inception and in its planning, and as a model example of excellent co-operation all the way down the scale between the three Services of two Allies—one might almost say three Allies, because the French did come into it in the later stages to a very large extent. The Lecturer has explained how this very fine co-operation was achieved and I would like to add my small tribute to General Eisenhower as a very great commander and I am sure we all hope that he will soon be a very much greater commander.

We are talking about the Navy to-day and I feel I would like to say how much the country owes to Sir Andrew Cunningham who was Naval Commander-in-Chief throughout this campaign. His great knowledge of the Mediterranean and great experience of the mentality of the Italians and also of the Germans, which he had acquired in the early part of the War, and all his great characteristics of determination and his offensive spirit and tremendous capacity for taking responsibility and, above all, his almost uncanny judgment when it comes to taking risks, did play a very big part in this Campaign.

With regard to its conception, I do not think it would be out of place to carry our minds back to the early days in the Mediterranean when, as you will remember, all the arms of all our Forces were badly out-numbered—some of them very heavily outnumbered, and the campaigns that we fought in those early days—some of them defensive, and all of them against heavy odds, made the one about which we have been thinking to-day eventually possible.

Egypt, of course, was vital, but I think Malta provides the most epic note in this story of the Mediterranean. The holding and supplying of Malta cost the Navy very heavy losses in ships and men, but had we lost Malta I think it is quite true to say that the conquest of North Africa would not only have been still further delayed, but it could only have been carried out by the deployment of considerably larger forces than were actually necessary. It may interest you to know that the conception of clearing the Axis out of North Africa took a very prominent part in our pre-War plans in the Mediterranean. The idea then was that the French with their North African army were going to push through from Tunisia while the British as soon as their forces were strong enough were going to push through from Egypt. The fall of France spoilt all that and it appeared at one time that the prospect of clearing the southern flank of the

Mediterranean was going to be deferred indefinitely. Three and a half years was a weary time to wait, but the job has been done now by two very brilliantly executed campaigns, one from Egypt in the East and the other from the West; and in both of them the Navy took a very full share.

I would like to finish with a word about the personnel. I was second to none in my admiration for the work of the Army and Air Force in this Campaign, but I would like to pay special tribute to the gallantry, the endurance and determination of the men of the Navy during that time. As the Lecturer pointed out, much of the work of the Navy in a campaign of this sort was irksome and unspectacular, with long periods at sea on escort covering work. In the narrow waters of the Mediterranean ships were always threatened by air and submarine attack with little or no respite in the dark hours and the short spells which the escort ships got in harbour (and they were very short) were often disturbed by air attack. The gallantry displayed by the officers and men of the Navy and the Merchant Navy in saving the ships and their companies from the dangers of the sea, from fire and high explosive, have yet to be written. There were the gallant frontal attacks on the harbours at Algiers and Oran, and the dashing work of the destroyers and the minelayers and the coastal craft against the enemy supply line which played such a vital part in the Campaign, and last, but not least, there was the devastating work of the men of the submarines.

I would like to say particularly to the distinguished Admirals in this audience that the torch they have handed on from the last war is burning brightly. Over 70 per cent. of the personnel of the Navy are now temporary officers and hostility ratings, but as sailors they are just as good fighting men as their predecessors throughout the centuries.

It only remains for me to thank Captain Dick very much for his lecture and for all the trouble he has taken in preparing it. He has done it during his only long leave in the last five years. (Applause.)

ADMIRAL SIR WILLIAM GOODENOUGH: In the ever-changing conditions of war the one thing that is a constant is the spirit of attack and in no place, by no Service, and at no time has that been better displayed than in the Mediterranean during the present war by the British Navy. How hard was the beginning, but how triumphant!

I met an American naval officer before the United States came into the War who had had the good fortune to be in all the actions in the eastern Mediterranean as an observer. I said: "You have seen a good deal." "Yes," he said, "I have seen the victory of a man's resolution." I said: "You have learnt a good deal too," and he replied: "I have learnt one thing and that is when once one is committed to action one must think no longer of one's weaknesses, but only of the weakness of those that are opposed to one."

Some little time ago I was discussing whether a man's character could be described in a single word and I said that, if so, Sir Arthur Wilson was that man, and the word was "purpose." And now if a man can be described in a single word, that man is Sir Andrew Cunningham, and the word is "attack."

Will our brother officers cast their minds back to the Mediterranean of, roughly, 1795 onwards and recall Lord Nelson's followers: Troubridge, Hallowell, Louis, Edward Berry, and others. The great name of Lord Nelson is not to be compared with anyone, but we may well consider the Commander-in-Chief's followers during the last few years—Syfret, Burrough, Ramsey, Troubridge again. It is almost invidious to mention names in case one is forgotten, but one which is prominent among them is that of Admiral Willis, our Chairman to-day, and in that spirit I ask him to accept our warm thanks not only for the work he has done but for coming to preside over our proceedings to-day. (Applause.)

LINES OR LOCALITIES?

AN EXAMINATION OF MODERN DEFENCE

By CAPTAIN W. R. YOUNG, M.C., Royal Artillery

"THE use of the word 'line'," says Miksche in his chapter on the Principles of Defence, "is to-day very dangerous. Any one who talks continually of 'lines' or the 'line' will find that his mind is dominated by linear conceptions of fighting that no longer represent realities of modern battle."

What, we may ask, are those "linear conceptions" which, even before the publication of *Blitzkrieg*, were condemned by military theorists generally in all the belligerent countries?

That some of these theorists thought of linear defence as defence by a *single* line is clear from the frequent use in lectures or debates of the phrase "thin red line." But it is, of course, a waste of time to discuss this point since no opposition theorist has ever advocated defence by a single line. Nevertheless it is an odds on bet that the "thin red line" will come up to-day in any enquiry into the relative merits of lines and localities; and, as it is proposed to open such an enquiry in this article, it is as well to rule out this thin red herring in advance.

That the enquiry is called for is suggested by the fact that, in spite of the rejection of "linear conceptions" and the adoption of "localities" by all armies, the defensive seems no longer to be "the stronger form of war."

War is an empirical science, and theory must, therefore, constantly be related to experience. Clausewitz is worth quoting on this point. "If any means," he says, "is once found efficacious in war, it is repeated; one nation copies another, the thing becomes the fashion and in this manner it comes into use supported by experience and takes its place in theory, which contents itself with appealing to experience in general in order to show its origin but not as a verification of its truth. But it is quite otherwise if experience is to be used in order to overthrow some means in use, to confirm what is doubtful or introduce something new."

In this controversy, however, we find that experience speaks with two voices since offensives have triumphed against localities as well as against lines. So neither party can back out of the argument by appealing to "experience in general."

The argument starts in 1916 when the Germans, after their experience in the battles of the Somme, made radical changes in their defensive policy. Their new doctrine embodied several features which do not concern us here; and one which does. For it is in the new tactics that we first come across the idea of a defensive system based on a loose grouping of *detached posts* instead of "rigid and easily recognized lines." From these detached posts have developed the company, battalion, brigade, divisional and corps localities of the modern manuals.

The better results—for they were better—which the Germans achieved in 1917 must be credited to the new defensive tactics; and it may be claimed that the detached posts lay-out was the most distinctive feature in these tactics. For other features like depth in defence and counter-attacks can be reconciled with a linear system; they were, indeed, part of the old defensive policy, though more stress was laid on them in the new.

To what, then, was due the success of these detached posts ? The short answer is that it was due to two factors. They were that British attack was (i) linear, (ii) dependent on artillery support.

Linear Tactics

Before proceeding further it is necessary to have a clear definition of the term " linear tactics " which must figure largely in this enquiry. It is suggested that it describes battle formations and movements in line rather than in column, and that it also involves the idea of " all along the line." Thus linear attack means attack on a wide front and, since it is " all along the line," it must be a dispersed rather than a concentrated assault. It may seek to envelop the enemy by extending its line beyond his flanks, or it may endeavour to push the whole of the enemy's line back. But it cannot aim at penetrating the enemy's centre.

Now there is nothing tactically unsound about the line formation in attack. It forces the defender to disperse his fire instead of concentrating it on the head of a column ; and it enables the attacker to bring all his weapons into play simultaneously, since none of them are masked. But the tactics often fail if they remain rigidly linear throughout ; if the line is always looking to its dressing ; if A and C mark time just because B and D have been held up ; if no advantage is taken of an opening which presents itself.

Even before 1916 the Germans had discovered that the continued resistance of quite small pockets of defenders in a line which we had penetrated often led to the subsequent withdrawal of the troops who had effected the lodgement. On the Somme they had seen us preferring to straighten our line by repeated assaults on positions which had resisted us instead of exploiting the success we had gained in another quarter. If, then, resistance in a few spots was able to hold up our advance on a wide front the German High Command could see little point in garrisoning a continuous trench line. The troops thus released from front line duty could be used to stiffen the defences behind the front. German defence, therefore, ceased at the end of 1916 to present resistance " all along the line." It was no longer linear, but *area defence* which confronted our assaults in 1917 ; and area defence seems from experience and theory to be the right answer to linear attack.

Defeating the Artillery

Ludendorff was fully alive to the fact that the power of the British attack lay in the artillery. He noted that thick barriers of wire and lines of trenches were conspicuous targets for our guns, which soon destroyed them ; that the deep tunnelled dug-outs, which alone provided shelter from our heavier shells, proved to be traps for prisoners when our infantry advanced close behind a creeping barrage. The High Command decided, therefore, to alter the character of German field defences. In general, concealment or inconspicuousness was to be the aim—light strands of wire rather than belts, posts instead of trenches. And they decided that " the very deep underground posts in the front trenches had to be replaced by shallower constructions."

The German front-line soldier had, however, already anticipated the High Command. He had early discovered that by leaving his trench and occupying a shell-hole outside it he escaped most of our deliberate bombardment. Such shell-hole posts were indistinguishable among the thousands of similar holes which covered the terrain ; they were scattered in a haphazard grouping (since their tenants were

mainly concerned with " finding a better 'ole "), and so tended to foil the creeping barrage, which advanced in straight lines ; and they were the " shallower constructions " recommended by Ludendorff. For all these reasons the shell-hole post policy was found efficacious at the end of 1916 ; it was repeated in 1917 ; " and soon the thing became the fashion and took its place in theory."

When, however, Ludendorff launched his offensive in March, 1918, and his subordinate, von Hutier, broke through the thinly held lines of the Fifth Army in a number of places, the defence, whatever its original lay-out, soon resolved itself into a loosely-grouped collection of posts. But these proved quite ineffective in stopping the German advance. For the German attack was of a new type. It aimed at finding weak spots or gaps in the defences and infiltrating through them. It ignored the pockets of resistance and boldly pushed past them into the depths of our positions. It exploited every success and never worried about its failures—or its flanks. It was the very opposite of linear attack, and it certainly seemed to provide the answer to the localities system of defence. This type of attack thenceforward became the fashion in the German Army ; and after the Great War it was copied by at least one other nation—the Japanese.

Japanese Infiltration

It is the Japanese who will serve as a link to bring the argument forward to the present war ; for it was in the accounts of the campaign in Malaya that we again began to hear the term infiltration. That campaign is a painful memory to recall, but it cannot be omitted from the argument since it provides a clear example of " localities " defence being defeated by infiltration attack. We held posts on all the roads—" the likely avenues of approach "—and the Japs simply filtered past us through the jungle.

It is true that the jungle provided unusually favourable conditions for infiltration, that it was impossible for the garrisons of the localities to keep the gaps under observation even by day, that the Japanese command of the sea further prejudiced our chances. Nevertheless it must be emphasized that it was not " linear conceptions " of defence which caused the loss of Malaya. For that explanation has been solemnly put forward by critics.

We discover, then, from the experience we have examined so far, the curious anomaly that the so-called " modern " defence based on localities is ineffective against the modern type of attack. This, indeed, is to be expected in theory since a defensive position which consists largely of gaps must be peculiarly vulnerable to an attacker whose object is penetration of the centre. A continuous line, however weak, would have to be broken before penetration could be achieved ; but attacking troops can penetrate a group of localities by passing between them.

Modern theorists, nevertheless, continue to pour scorn on those who talk of lines, and to advocate the localities policy which has repeatedly failed in its object. Yet they are forced to admit that, at any rate in conditions of bad visibility, localities can be by-passed by infiltrating infantry. So they advocate active and constant patrolling between the localities—and thereby surrender their whole case. For while the patrols are out the localities are linked into a continuous line ; when they are not out, infiltration can take place.

Even Miksche, arch-advocate of localities, can write :—" In some cases shock troops will leave the islands of resistance before action . . . and will conceal themselves in the ground between the islands." Miksche here even deprives his own

supporters of the argument that their lines, being composed of mobile patrols, are not lines in the old sense.

The Russian Theatre. Theory and Practice

The Russian theatre will, no doubt, provide more material for the future student of war than any other. The strategist will revel in the large scale manœuvres and wedges and encirclements; but this article is merely interested in tactics, and in a particular point of tactics at that.

Fortunately for our purpose we have in *Soviet War News* a supply of day to day information on the fighting in Russia. And it is proposed to quote extensively from this source. First we may note that Russian theories of defence are orthodox, *i.e.*, anti-linear, as is shown by the following passages from an article, " Defensive Strongholds," by Colonel Shishkin in the issue of 20th October, 1942. The italics are ours.

" During the War of 1914–1918 defences usually consisted of *a front line* along which deep trenches stretched over tens and often hundreds of miles. The *peculiarity of present day defence is its depth.*"

After pointing out that the attacker can always concentrate against weak points and break through, the author goes on :—" For this reason deep defences are created *where the enemy blow is most likely to fall.* . . . This has produced a special system of defence made up of strongholds and *centres of resistance.*" The object of these strongholds, we are told, is to break up the attack, to tie up forces which might otherwise be thrusting forward, and to thin them out.

Then follow the usual admonitions about the necessity for all round defence, for interlocking fire systems covering the gaps and, of course, for mobile patrols. The Germans, says the Colonel, used this system of localities during January and February, 1942, but " nearly all their strongholds were situated in towns and villages. The use of inhabited points as strongholds meant that the separate elements of the centre of resistance were not always too well related. The Germans supplied the link by detailing small mobile groups . . . to patrol the roads."

After this exemplary exposition of the " modern " view it is curious to turn back to the issue of 15th May, 1942, and read in Major Tronenkov's article : " New German defence tactics " that, in March and April of 1942, the Germans had given up the practice of converting villages into strongholds. Tronenkov states, moreover, that " the Germans had *no separate centres of resistance* such as have characterized their defence until now, but *three solid fortified lines.*"

An even earlier issue, dated 22nd April, 1942, reported that the Germans had " managed to build *solid lines of fortifications stretching for many miles. Every offensive operation by the Red Army inevitably entails a break through such defences.*"

The trend towards lines grows as the Russian war goes on, and the development does not seem to please the attackers. Of Orel we read that " the Germans' *defences* are the *most formidable* they have ever built on this or any other front. . . . The first belt of defences consisted of *five rows* of trenches. . . . The second belt consisted of three *lines of trenches.* . . . Then followed a third belt and behind that there were innumerable *lines* of defence in depth." (31st July, 1943.)

Znamenka, a nodal point of many railways, was similarly defended. " The Germans," we read, " built an extremely strong defence *line*, with barbed wire entanglements, minefields, trenches and anti-tank ditches stretching from Kamenno–

Pototskoye on the Dnieper . . . to Krivoi Rog. Behind this line was a second *line* of defences *strung along* narrow rivers." (13th December, 1943.)

The final evidence is provided by a report from a Reuters and B.U.P. Correspondent (*News Chronicle*, 12th February, 1944). "Everywhere on the Russian front there has been a noticeable change in German defensive tactics. *Trench lines* similar to those of the last war are replacing the German hedgehog defences, says *Red Star*. Captured orders show that the Germans have been told to dig *trenches linking all their strong points*." And *Soviet War News* of 15th March, 1944, tells us that "the Germans resorted to the trench system for two main reasons: first, owing to shortage of man-power; secondly, because the Soviet troops have learned to perfection the art of infiltrating through gaps between enemy strong points, and of outflanking and blockading them."

And so the wheel turns full circle. The Germans in 1916 invented local defence to counter linear attack. In 1918 they invented infiltration which counters local defence. In 1943 and 1944 they revert again to lines to counter infiltration.

Now the Germans are no amateurs at the game of war. The fact that their lines have not succeeded in stopping the Russians is neither here nor there. The important point is that the Germans thought that they stood a better chance of winning a defensive battle by holding continuous lines than by holding separate localities. The Russians, too, know a great deal about war. They plainly admit that they have found localities an easier proposition to attack than lines. After their experience at Orel and Znamenka they found a simpler passage at Rovno, where "The Germans had *failed to create solid defensive lines* . . . and relied mainly on the interaction of *separate garrisons*. Their attention was focussed chiefly on the roads. They did not expect that Soviet units . . . would be able to pass through the marshes and forests. But that was precisely what happened. Having pierced the forward edge of the enemy defences the Soviet troops moved across the roadless terrain, by-passing German centres of resistance. The Germans withdrew from a number of villages, fearing to be cut off from their main forces. Not a few localities were surrounded by Soviet units and their garrisons wiped out." (*Soviet War News*, 7th February, 1944.)

The Russians, of course, have found ways of breaking through solid defensive lines—but that is another story. And when they have done so the remainder of their task is easy. Colonel Khitrov (*Soviet War News*, 17th September, 1943) describes the sequence: "Our units penetrated into the Germans' positions, split up the enemy forces into several groups and destroyed each of them separately. When the enemy forces have been split up into a number of groups, and there is *no continuous front line* . . . the existence of open flanks and gaps in the enemy's line makes it much easier to filter through behind his lines."

Quotations could be multiplied *ad nauseam*. The blunt truth is that defence according to the "modern" book has rarely succeeded and has repeatedly been made to look ridiculous. Modern attack aims at penetration. Defence, therefore, should seek to prevent penetration. And this can best be achieved by means of *solid defensive lines*.

TRADITION IN H.M. SHIPS

A COMPARISON WITH THE REGIMENTAL SYSTEM

By "OBSERVER"

THE question of the retention of the regiment as being the traditional unit of the Army recurs again and again in military articles and letters to Correspondence in the JOURNAL. On the one hand it is urged that the identity and individuality of the regiment must be preserved, not merely on grounds of sentiment but because they are invaluable to morale, especially in battle; on the other hand it is argued that regimental traditions being linked largely with territorial recruiting and drafting, and these being impracticable in war time, it would be more logical that the Army should be organized on a weapons basis, *i.e.* that it should be composed of a Royal Armoured Corps, a Royal Regiment of Artillery, etc., and hence a Corps of Infantry.

Doubtless there is much to be said on both sides, but need the utilitarian advantages of a Corps organization necessarily imply the elimination of those derived from maintaining the history and traditions of the units which compose them. It is here that a naval officer ventures to intrude on this military controversy by suggesting that his Service has to a large extent solved this problem. The Navy recruits on a wide territorial basis, but Portsmouth, Chatham and Devonport are the principal administrative centres in peace time, and all large H.M. ships are attached to one of the three Home Ports. This is not only convenient for drafting but it also provides some scope for territorial individuality; *e.g.* a West Country crew always have strong traits of their own associated with the homes of their birth.

Yet the wide areas of recruitment and limited territorial association in administration do not prevent that "pride of ship" which every well commanded ship's company acquires within a very short time of commissioning and retains to the day of paying off, and which many men are wont to retain even in years to come without detriment to a new found pride in a new ship. True, there is something concrete in the existence of the ship herself to inspire the crew with something more than an honourable name; but every new commission has got to acquire that for itself, while a regiment has continuity of service to maintain its traditions and to hand on the torch.

There is much to be said for at least some measure of continuity of service in the same unit, and in peace-time some ships changed only a proportion of their crews at intervals instead of paying off entirely and starting afresh; but it is not feasible to adopt such a system universally throughout the sea Service: for example, ships must, at intervals, go to their dockyards for a comprehensive refit and it would not be economical to retain part of the crew merely to give a new commission a better start.

It is suggested that, taking it "by and large," the Navy gains in efficiency by the turn over of crews at not too long intervals. True, at the very beginning of a commission a ship is not fit for action; but it is surprising how quickly the various human components—specialists and otherwise—blend into a good team. Taking over a new ship is in itself an inspiration; it is also something of a challenge to the enthusiasm and energies of the officers and men to see how quickly they can make her efficient. If, during a commission, there are necessarily some changes, the

newcomers—if they are of the right sort—set out to learn their new duties in the same spirit, and they identify themselves in every way with the " pride of ship " which becomes theirs.

The flexibility of this sytem of providing what is the Navy's equivalent to the regimental unit, prevents a relatively small community from getting stale ; misfits can try again—perhaps making good amongst different companions or more congenial surroundings ; promotion is on a Service-wide basis, and no one need feel that his future is bound up with the limitations and restrictions of a single community, because when he has served his time in one ship, he will be given an opportunity to prove his worth elsewhere.

The traditions of the Navy as a whole are as individualistic as those of any regiment, yet there is room within them for " pride of ship." Names which became famous under " Nelson, Rodney, Hawkins, Drake " are still an inspiration to the crews of the ships which bear them to-day, and as such they are comparable in every way to those of famous regiments. Officers and men change—and it is " for the good of the Service." The ship herself becomes worn out or is lost in action ; but the honoured name goes on from commission to commission ; from ship to ship ; from generation to generation ; and with it the devotion to what it stands for. Would not the same continue to apply to the regiment, even if (as seems to happen in war time) it becomes merged in a much larger organization ?

THE CORPS OF INVALIDS

By CAPTAIN C. G. T. DEAN, late Royal Artillery

IN the military literature of the XVIIIth Century there are frequent references to " the Invalids." These units, as their name implied, were composed of non-effectives, that is to say, of soldiers discharged as unserviceable. Their duties were purely of a defensive nature and therefore somewhat prosaic ; and possibly for that reason they have been given little attention except by the historians of the 41st Regiment, which was originally an Invalid Corps. In the following account it is proposed to trace the origin and early history of the Invalids prior to the raising of that regiment in 1719.

Towards the end of the XVIIth Century, the defences of England and the Channel Islands comprised nearly forty Royal castles and coastal forts. Each of these fortresses was provided with a few gunners to take care of the fixed armament, while the more important were garrisoned by one or more companies of Foot. These companies might be either detached from some regiment or else formed as independent companies specially for the purpose, probably from soldiers unfit for more active duties. Such was the position in the Autumn of 1688, when James II hastily began raising new units to counter the impending invasion by William of Orange. In particular, the King decided to embody the more active of the old soldiers who were then living in the neighbourhood of Westminster while awaiting the completion of the Royal Hospital, Chelsea. As a news-letter of 6th October records :—

> " The raising of New Forces here goes on vigorously . . . His Majesty hath viewed the Pentioners of Chelsey Hospital, and such other Officers and Soldiers who are layd aside because Advanced in Age, and One or two Companies will be formed out of them ; in particular 50 of them under the Command of Captain Cony are to march to Windsor Castle, and the Soldiers from thence to come and joyn their proper Regiment." [Brit. Museum, Add. MSS. 3,929.]

The old soldiers, who had been granted pensions by James II after the Battle of Sedgemoor, evidently responded better than anticipated, for actually three Companies were formed. Each consisted of a Captain, Lieutenant, Ensign, two Sergeants, three Corporals, two Drummers and 50 Privates. One was commanded by Captain Edward Pickering, with Thomas Ewers as his Lieutenant ; but the names of the other officers have not been preserved. No special uniform seems to have been issued, and it may be presumed that the men wore their old regimentals. Captain Cony's unit apparently did not go to Windsor as intended, for the Army Estimates for November and December, 1688, show that one of the three companies remained at Chelsea, while the others were sent to " Tinmouth " and Hampton Court. The Invalids do not seem to have been involved in any fighting, though the Dutch Guards actually passed the gates of the Royal Hospital in the course of their advance on Whitehall. As the old soldiers must have had strong Jacobite sympathies it is scarcely surprising that the Prince of Orange should have disbanded the three companies at the end of the year ; but he showed considerable political acumen by restoring the men to the pension list. Thus ended the first organized employment of discharged soldiers on garrison duties.

The idea was soon revived. In May, 1690, the Lieutenant-General of the Ordnance was ordered to provide arms for a draft of 100 private sentinels, 10 corporals, 6 sergeants and 2 drummers from Chelsea Hospital, as the Royal Hospital was then usually called. This company was to keep garrison at Windsor Castle. Two years later, when it was augmented by 46 more invalids " drawn out of Chelsea College "—another alternative name for the Royal Hospital, the Lieutenant-General of the Ordnance was instructed to supply 46 snaphance muskets, two barrels of powder, a barrel of musket-shot and 100 lbs. of match. [P.R.O., Home Office, Military Entry Book 2, p. 115, 263.]

At the same time the following establishment was authorized :—

" One Company of Pensioners to do Duty constantly at the Castle of Windsor, whose pay is to commence from the first of May, 1692 :—

	£	s.	d.
Captain		4	0
Two Lieutenants at 2s. each		4	0
Ensign		1	6
Six Serjeants at 9d. each		4	6
Six Corporals at 7d. each		3	6
Two Drummers at 7d. each		1	2
150 Private Souldiers at 5d. each ...	3	2	6
	£4	1	2

" For Cloathing for this company, which is to be provided for them once in two years :—

	For a Serjeant. £	s.	d.	For Corporalls, Drummers and Souldiers £	s.	d.	
Coat and Breeches ...	2	15	0	1	12	0	(Coat with false sleeves)
A Hatt		10	0		5	6	
Two Shirts		8	0		5	8	
Two Neckcloths		2	0		1	8	
One Pair of Shoes ...		4	0		4	0	
One Pair of Stockings ...		3	0		2	0	
A Sword and Belt ...		10	0		8	0	
	£4	12	0	£2	18	10	

[P.R.O., War Office, Establishments 24/15]

There was also a grant for " Fire and Candle " of 3s. a day in the Winter, and 1s. a day in the Summer months ; these being the usual rates for garrisons where, as at Windsor, only one Guard was mounted. When forwarding this Establishment for the King's approval the following August, the Paymaster-General explained that : " you will find in our Draught an independent Company for Windsor, wch is framed out of such of our invalids as the General Officers (upon the Review they tooke of them before his Matie left England) marqued down as fitt to serve in Guarisons and not to be lodged in our hospitall . . . The paye of this Company is as moderate as possibly can bee, and was settled by Lt.-General Talmashe[1] before

1 Thomas Tollemache. Appointed Colonel of the 5th Foot in 1688. Promoted to Major-General in 1690 and Lieut.-General in January, 1692. Died in 1694.

hee left us, and their Cloathing is as cheape as wee could make it, Being different from those in ye Hospitall, for wee give them Gray Coates lined with blew and without Cyphers, whereas the others have red Coates with Cyphers." [Brit. Museum, Marl. MSS. 4,712 fol. 89.]

These economies were certainly drastic. The rates of pay were much lower than for the Foot, being, indeed, no more than the pensions the old soldiers had received while awaiting the opening of the Royal Hospital. As to the uniform, gray was worn by at least one regiment of Foot, and was therefore no novelty; but its quality must have been distinctly poor as the cost was nearly £2 less for sergeants and £1 less for the rank and file than those issued for the Royal Hospital. It could not have been economical in practice, as it must have involved the re-clothing of every draft furnished from Chelsea, and it was soon replaced by the familiar red coat with blue facings of the Royal Hospital. Two modifications were made, however, in the Chelsea uniform, probably during William III's reign. Waistcoats were introduced, and the large Royal Cypher hitherto worn on the front and back of the coat was omitted.

In September, 1693, it was rumoured that "the maimed soldiers in Chelsey colledge will be sent to the sea coasts to keep garison, to make room for those [casualties] that are coming from Flanders"; but it was not until 1st June of the following year that orders were issued for three new Companies of Invalids to be raised. Another three months elapsed before these units were armed and sent to Hampton Court, Chester and "Tinmouth." The latter Company seems to have been transferred to Falmouth at some date after 1695, but was back at Tynemouth Castle by August, 1699. Meanwhile, in September, 1698, the establishment of each of these three companies had been raised from 92 to 168 officers and men, the same as that of the original Windsor Company. No doubt the object was to absorb some of the soldiers disbanded after the Peace of Ryswick. The personnel of the four companies were described at this period as "600 of maimed and decrepid."

After Queen Anne's accession the policy regarding the Invalids was reversed, probably by the Duke of Marlborough, the Captain-General or Commander-in-Chief. Each Company was reduced, in February 1703, to a Captain, Lieutenant, Ensign, three Sergeants, two Corporals, a Drummer and 75 "private men." At the same time the Chelsea Commissioners—the governing body of the Royal Hospital, who now became responsible for "the ordering, recruiting and keeping of the Invalids," were instructed not to fill vacancies without the Captain-General's written approval. The 232 invalids rendered surplus to establishment by this order were dismissed with a gratuity of £1 each, "to enable them to returne home"; but seven months later, probably as the result of a petition, they obtained "pensions equall to their pay before their late reducement." [Royal Hospital, Chelsea Journal.]

The officers of Companies of Invalids received half-pay. The Captains, who were usually officers of that Army rank, but sometimes Majors or even Lieutenant-Colonels, were appointed by the Captain-General. The Lieutenants and Ensigns, on the other hand, were nominated by the Chelsea Commissioners, who at this date comprised the two Army Paymasters, Sir Christopher Wren, and the Governor and Lieutenant-Governor of the Royal Hospital. These subalterns were usually Officers, Gentlemen of the Life Guards or others who had been invalided out of the Service on the maximum rate of pension. Thus when two Ensign's vacancies were filled in October, 1704, both the candidates chosen were so qualified, and one of them had previously held the same rank in a Regiment of Foot.

The officers' half-pay was defrayed from Army funds, and the pay of the rank and file by the Chelsea Commissioners, but no provision was made for renewing the men's clothing every other year as in the Army. In October, 1704, a Captain of Invalids complained that his men " are almost become naked, not having been Cloathed these Three Years," and asked the Secretary at War to lay the matter before Prince George of Denmark, the Queen's consort. On being consulted, the Chelsea Commissioners reported that they had no funds for providing Invalid clothing, but their objections were overruled and thenceforward this expense was charged against the revenue of the Royal Hospital. [P.R.O., War Office, Secretary's Out-Letters 4/3, p. 88.]

Probably on William III's death, the Company of Invalids at Hampton Court was moved to Greenwich. Being " insufficient to do duty," it was reinforced in December, 1703, by 30 out-pensioners; a similar number of whom were sent to Windsor and Hampton Court at the same time. The Greenwich Company had to find a detachment for Upnor Castle, near the mouth of the Medway. While guarding the marshes in the Isle of Grain in the Autumn of 1705, the old soldiers endured great hardships, having to stand with the water up to their knees, unprotected by sentry boxes, and three miles from the nearest shelter. So unpopular did service in garrison become that pensioners selected for this duty were allowed " to hire men in their roomes." In 1704, " several Invalids of Chelsea Hospital who did duty at Kensington (upon a detachment of 600 of the Foot Guards for Portugal)," were granted allowances in lieu of rations. By relieving the troops who later participated in the capture of Gibraltar they evidently performed a useful service.

Four years later the old soldiers were again in demand. On 12th March, 1708, news reached London that Prince James Edward had sailed from Dunkirk at the head of an expeditionary force with the intention of landing at Edinburgh, which was then only weakly garrisoned. This information caused consternation, and orders were immediately issued " for forming six Companies of Invalids to do duty at Sheerness, Tilbury Fort, Landguard Fort [near Harwich] and Dover, in the room of Brigadier Livesage's regiment designed to march northward." [Historic MS. Commission, Report on House of Lords MSS., vol. 8.] Difficulty may have been experienced in finding officers at such short notice, for Captain Richard Bettesworth, the Major of the Royal Hospital, who had lost a leg at Landen, was posted to the company already stationed at Tynemouth Castle. This seems to have created a precedent, for two years later Lieutenant Robert Stapleton, the Steward or " Second Major " of the Royal Hospital, was sent to one of the Tilbury companies.

Although the precautions taken in 1708 proved unnecessary, as the hostile fleet was dispersed by an English squadron, the Invalids must have been considered useful because an additional company was raised the following year for Hampton Court, and yet another in 1710 for Upnor Castle. In the Spring of 1711, George Granville, the Secretary at War, drew up an establishment and nominated officers for fifteen new Companies of Invalids. For some unexplained reason only seven of these units were formed—three for the Tower of London and the remainder for Portsmouth, where the garrison was seriously reduced through sickness and drafting. In June it was reported that the latter four companies " upon being formed at Chelsea College had marched to the Brentfords and parts adjacent, and were obliged to continue in quarters there for want of money to march further." Two months later, as no action had been taken, the Lieutenant-Governor of Portsmouth discreetly suggested to the Treasury that his command " could not then be strengthened but by the four Companies of Invalids, who remained at Brentford for want of money

to discharge their quarters and pursue their march." [P.R.O., Treasury, In-Letters 1/134 and 1/136.]

The eight companies that had not been formed were intended to relieve the Regiment of Lieut.-General Mordaunt; their cost being estimated at £2,295, as against upwards of £12,000 per annum for a Line regiment. The officers nominated for these units received no pay, and in October, 1713, represented to the Lord Treasurer that:

> "tho they have had a very large Credit from the City of Westmr, yet severall have perished for want of Common Necessarys for Life, others are now in Gaole, and those few that are left to solicite their hard Case must suffer to the last degree if not speedily relieved, for the inhabitants will give no further Credit to them." [P.R.O., Treasury, In-Letters, 1/165.]

Having been appointed while the Duke of Marlborough was Captain-General, these old officers could not have expected much sympathy from the Tories who had supplanted him. Moreover, there was no prospect of their services being required again, the Treaty of Utrecht having recently been signed; and nothing seems to have been done for them.

In February, 1712, the Chelsea Board, now reconstituted so as to include most of the leading State officials and all Privy Councillors, were directed:

> "That upon the vacancy of any commissioned officer belonging to ye Invalid company, no person be admitted who hath not been disabled by wounds in ye service, or who shall not have served twenty years. That no person having been dismissed the service upon any account, or having sold his commission, be admitted into the said companies, and that upon due examination made concerning ye persons pretending to such vacant commissions you shall present to Us the names of any number not exceeding five of such officers so qualified, that we may bestowe the said vacant commission upon one of them." [P.R.O., Audit Office, Enrolments, vol. 24.]

Eight months later, the Secretary at War nominated a certain Captain Florence Kane to fill the vacancy caused by the death of Lieutenant Stapleton without consulting the Chelsea Board. He probably had to act quickly as the company in question was being moved from Tilbury to Windsor. In any case, Kane had several campaigns in Flanders to his credit and had already commanded another Company of Invalids for four years. The Chelsea Board evidently approved the appointment, because soon afterwards they nominated Kane to succeed Stapleton as Second Major of the Royal Hospital.

During the closing years of Queen Anne's reign the four senior Companies of Invalids were stationed at Windsor, Hampton Court, Chester and Tynemouth; and the eight junior at Hampton Court, Greenwich, Tilbury, Tilbury Fort, Upnor Castle, Sheerness, Dover and Landguard Fort. On her death, among other precautions against a Jacobite invasion, 1,200 out-pensioners were called up; 108 being sent to Greenwich and 600 to Portsmouth. News of the impending rising of '15 led to twelve more companies being raised on 2nd August for service at this naval port, and eleven days later yet another four were formed—two for Plymouth and the others for Falmouth and Pendennis Castle. Probably in order to stimulate their loyalty, the men were now given the same rates of pay as the Foot, instead

of their out-pensions as formerly ; the establishment of each company being regulated as follows :—

	£	s.	d.
Captain, and in lieu of his servants ...		10	0
Lieutenant, and in lieu of his servant ...		4	8
Ensign, and in lieu of his servant ...		3	8
Two Sergeants, each 12d.		2	0
Two Corporals, each 8d.		1	4
One Drummer			8
Fifty Private Souldiers, 6d. each ...	1	5	0
	£2	7	4

[P.R.O., Audit Office, Establishment of the Forces]

The companies sent to Plymouth must have just forestalled the Duke of Ormonde, who landed or attempted to land near that port the following month, but retired on being foiled in his hopes of raising the West. Evidently with a view to promoting efficiency, the Companies of Invalids were brought under the Mutiny Act in 1716 ; and thenceforward discipline was as strict as in the Army. In July of the following year two Invalids convicted by Court Martial at Plymouth of deserting from their company were ordered to be whipped and struck off the pension list. In 1720 a Captain who had complained to the Secretary at War of one of his sergeants, was ordered to withhold the man's pay until he had made his submission. Apart from the strict discipline, the old soldiers had to endure much discomfort on occasion. Thus some Invalids returning to Chelsea from garrison as unserviceable in July, 1717, had " to lay in the fields " as all the available billets had been taken by the Foot Guards.

The year 1719 witnessed a great expansion in the number of Invalid corps, including the formation of a Regiment of Invalids, later the 41st Regiment, as described by its historians. Thenceforward for the remainder of the XVIIIth Century the Invalids were extensively employed on garrison duties.

NOTE

The following works of reference or authorities have also been consulted in compiling this article :—

British Museum, Add. MSS., 5,752, 5,940, 10,123, 10,124.

Public Record Office :
Audit Office, Chelsea Hospital declared accounts.
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Treasury, In-Letters 1/136, 1/141, 1/145 ; King's Warrant Book 20.
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" *The Case of the Officers who were Commissioned by Her Majesty* " (Anon.).

C. Dalton, *English Army Lists* ; and *George I's Army*.

J. Fortescue, *History of the British Army*.

G. Hutt, *Early History of the Royal Hospital at Chelsea*.

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THE INTERNATIONAL SITUATION

MILITARY POWER AS THE FOUNDATION OF PEACE

Si vis pacem para bellum

THE Prime Minister, Mr. Winston Churchill, following on a meeting of the Dominion Prime Ministers in London, made a speech in the House of Commons on 24th May, 1944, at the opening of a debate on foreign affairs.

In the course of his remarks he referred to international policy and the post-War measures which will be necessary to safeguard the world from future aggressors. The following extracts relate to the need for maintaining military power as the foundation of enduring peace :—

". . . . the Atlantic Charter in no way binds us about the future of Germany, nor is it a bargain or contract with our enemies. It has no quality of an offer to our enemy. It was no offer to the Germans to surrender ; if it had been an offer that offer was rejected. But the principle of unconditional surrender which has also been promulgated will be adhered to so far as Nazi Germany and Japan are concerned, and that principle itself wipes away the danger of anything like Mr. Wilson's 14 points being brought up by the Germans after their defeat, claiming that they surrendered in consideration of them. . . .

" There is no question of Germany enjoying any guarantee that she will not undergo territorial changes if it should seem that the making of such changes renders more secure and more lasting the peace of Europe ; scarred and armed with experience we intend to take better measures this time than could ever previously have been conceived in order to prevent a renewal in the lifetime of our children of the horrible destruction of human values which has marked the last and the present world wars. We intend to set up a world order and organization equipped with all the necessary attributes of power in order to prevent the breaking out of future wars or the long planning of them in advance by restless and ambitious nations.

" For this purpose there must be a World Controlling Council comprising the greatest States which emerge victorious from this war who will be obligated to keep in being a certain minimum standard of armaments for the purpose of preserving peace. There must also be a World Assembly of all Powers whose relation to the World Executive or Controlling Power for the purpose of maintaining peace I am in no position to define.

" The shape of these bodies in relation to each other can only be settled after the formidable foes we are now facing have been beaten down and reduced to complete submission. . . .

" This does not mean that nations should not be entitled to rejoice in their traditions and achievements, but they will not be allowed by armed force to gratify appetites of aggrandisement at the expense of other countries merely because they are smaller or weaker or less well prepared, and measures will be taken to have ample armies, fleets and air forces available to prevent anything like that coming about.

" We must, undoubtedly, in our world structure embody a great part of all that was gained to the world by the structure and formation of the League of Nations. But we must arm our world organization and make sure that within the limits assigned to it it has overwhelming military power."

TURKEY'S BREAK WITH GERMANY

IN the course of his statement on the War, made to the House of Commons on 2nd August, 1944, the Prime Minister said that he was authorized by the Turkish Government to announce that, on the basis of the Anglo-Turkish Alliance, Turkey had broken off all relations with Germany. He explained that this did not mean that either country had declared war on the other; but he undertook that if Turkey was attacked, Britain would make common cause with her.

Mr. Churchill also remarked that when the War began, although Turkey felt herself a strong military Power, "resolute in her goodwill towards England and France," yet she felt she was deficient in aircraft, tanks, self-propelled vehicles and mechanization in every form. These deficiencies have to a considerable extent been repaired. With the contribution of Britain and the United States to the war in Italy and the Russian advance in the region of the Black Sea, he felt that Turkey was in a more secure position than she had been since the War began.

A crisis in Turco-German relations has been working up for some time. On 14th April last, representations were made on behalf of the British Government to the Turkish Government that there had been a pronounced decrease in the export of chrome to Britain, and a corresponding increase in supplies to Germany. On the 25th of that month it was announced that the Turkish exports of chrome to the enemy would cease.

On 14th June, Mr. Eden—Foreign Secretary, stated that representation had been made by the British Ambassador in Ankara that Germany was being permitted to pass through the Dardanelles into the Ægean so-called K.T. ships of some 800 tons, normally armed with two 3.7 in. guns and machine guns, used mainly for transport of troops and stores; also "Ems" class craft of 40 or 50 tons, armed with a 3-pdr. and depth charges, used for various war purposes, including submarine chasing. These vessels were ostensibly disarmed for the passage, but were re-armed on reaching their destination. This, it was contended, was a violation of Article 19 of the Montreux Convention.

The following day, the Turkish Cabinet not having approved the policy followed recently by him, their Foreign Secretary—M. Menemenjoglu resigned. He was succeeded by M. Sarajoglu, who immediately announced that all German craft of the type referred to would be considered as warships and not allowed to pass through the Straits, and that all German merchant ships arriving at Istanbul would be subject to the closest inspection.

Von Papen, the German Ambassador, left Ankara on 2nd August; the Turkish Chargé d'Affaires left Berlin the following day.

CORRESPONDENCE

(Correspondence is invited on subjects which have been dealt with in the Journal, or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the Journal.—EDITOR.)

COMPULSORY TRAINING FOR YOUTH

To the Editor of the R.U.S.I. Journal.

SIR,—Both the Trench Gascoigne Prize Essays favour a form of National Conscription for defence and accompany this with a suggestion that membership of one of the Youth Organizations must also be made compulsory.

As regards Youth Organizations, too much weight, it is submitted, is given to the advantages of compulsion and too little to its disadvantages. Compulsion necessitates Governmental control of finance, training and administration. It is improbable that any Government in power would shoulder the burden of financing all those Youth movements which have for many years successively relied solely on voluntary contributions. All Youth movements which maintain a good standard of discipline, and cater for the moral and physical welfare of boys and girls, are indirectly preparing youth for National defence. To quote an extract from the Foreword by the C.-in-C. Home Forces in the *Army Cadet Force Journal* for June, 1944: ". . . . you will be acquiring certain valuable qualities. You will become more self-reliant, you will understand the value of loyalty, you will learn to be alert, you will get tougher, and you will appreciate the meaning of discipline. Cadet officers should understand that *it is far more important to develop these qualities among those whom they instruct than to teach military techniques. . . .*" (My italics.) The three Service cadet corps, unlike other Youth movements, include a measure of pre-entry training.

In the immediate post-war years it is probable that Parliament will authorize reasonable expenditure for the maintenance of the Service cadet corps. The Service Departments have expressed an intention to continue their present support and control; but no Head of a Department can commit his successors, and the final word must rest with the House of Commons which holds the purse-strings. Party political expediency, or public opinion which may again be successfully misled by the propaganda issued by Pacifist societies, may, and probably will prevent any settled long-term policy being adopted, and great harm would be done if training or recruitment of youth had to be curtailed or to cease at short notice owing to lack of funds. This would have happened to the Sea Cadet Corps in the years 1925–27 when the small Government grant, which until February, 1942, totalled only about 7 per cent. of the cost of maintenance, was withdrawn, if the Navy League, which contributed 93 per cent. raised by voluntary contribution, had not been behind the movement.

Other somewhat less important objections to compulsion come to mind. A very few malcontents can do much harm in a unit, but these are less likely to be found among volunteers than among conscripts. Discipline would suffer, because practically the only disciplinary sanction at present is discharge which would not be available in the case of compulsion; and other disciplinary action would be made the subject of protest by dissatisfied parents. Under compulsion Cadets in open units could not be encouraged to become partners in the movement by paying a few pence a week for the privilege of being enrolled. This has been, and still is, the custom in the Sea Cadet Corps and is appreciated.

The number of Sea Cadets before the War (10,000 in 1939, omitting those in the overseas Dominions) was no indication of the number who wished to join; that number was limited by the funds available, and the same probably applied to the A.C.F. and the A.T.C.

Recognition and support by the Service Departments is, of course, welcomed in peace time and becomes essential in time of war. It must, however, be borne in mind that the greater the control by the State the greater the spate of forms, regulations and orders with which the officers of the units are flooded, and if these public-spirited, unpaid, volunteers are turned into " office-wallahs " the training and welfare will suffer. It is not always easy to find those who possess the necessary qualifications who can devote long hours of their spare time to help youths who wish to help themselves. Far harder would it be to find suitable men if unwilling youths in large numbers were forced upon them.

J. E. T. HARPER,
Vice-Admiral.

2nd July, 1944.

To the Editor of the R.U.S.I. Journal.

SIR,—I have read Major-General H. Rowan Robinson's admirable essay with great interest and no little astonishment; the latter because as I turned the pages I became more and more thoroughly convinced that the author believed that the human race was composed of one sex only.

The title refers to " Youth " and " Youth Organizations "; the author, moreover, refers to the " various juvenile organizations." Surely the words " youth " and " juvenile " include both male and female. Major-General Robinson does not say that he disapproves of training, compulsory or otherwise, for girls; he does not say that in his opinion training is less essential for girls than boys or that it should be different; he just does not mention girls once in the whole of his sixteen pages. At the present time one may be permitted to think this astonishing.

The author says that one aim of youth movements is " to afford boys moral, mental and physical training in order to render them fit in body and mind and to instil in them the basic virtues of religion, patriotism, loyalty and good citizenship; to prepare them in short for the battle of life and selfless service to the community."

I will not reveal while in my present position whether or not I think compulsory training for youth is advisable, but this I will say, that the ideal set out above is equally important for girls as for boys; that with girls as with boys " the juvenile associations touched until recently a mere fraction of our young people "; and finally, that no country can advance higher than its women, and indeed, that any country which idealizes physical force to an extent which keeps its women out of public life deserves the fate about to be inflicted on such.

If compulsory training for youth is considered in this country, I am not afraid that girls will not be mentioned.

VERA LAUGHTON MATHEWS,
Director, W.R.N.S.

14th July, 1944.

(*Note.*—It will be seen that Lieutenant-Commander G. M. Bennett in his Trench-Gascoigne Essay which tied for the First Prize and which appears in this JOURNAL, specifically alludes to the importance of youth organizations for girls.—EDITOR.)

REGIMENTAL TRADITIONS

To the Editor of the R.U.S.I. Journal.

SIR,—After reading the two articles on Post War Army Organization and Dress, which appeared in the February issue of the JOURNAL, and which disparaged regimental esprit-de-corps, it was a relief to find in the May number the articles on this subject and

on post war dress. In my opinion, however, even more emphasis should be laid on the immense value to the Army of its historical regimental traditions.

After this war a reorganization of the Army will certainly be necessary; but this is no reason why regimental and territorial connections should be scrapped. The British Army has the traditions of many great wars before this one to look back upon, in some cases for centuries. Such are a constant inspiration to the fighting spirit of all regiments.

As so often happens after a great war, between 1918 and 1938 drastic economies were carried out. This resulted in lack of money, out-of-date equipment, little progress, and no men to command. Tattoos, held to stimulate public interest and to raise funds, wasted a great deal of valuable training time. Promotion was very slow. This all led to a certain feeling of frustration amongst some officers, and it is hoped it will not happen in the future.

But this is no reason why the Army should be entirely recast and all regimental historical traditions thrown away.

Whatever orders of dress may be decided upon, every opportunity should be taken to embody in them tokens of regimental history and tradition. Every soldier of any experience knows well how proud the men are of each little regimental peculiarity and distinction of dress. It may be said truthfully that there is no better way to stimulate esprit-de-corps, and thereby efficiency, than by smartness in turn out and by rivalry and distinctiveness in details of dress between arms and units.

Territorial connections are also of great value, and it is good to read that the Secretary of State for War, recently in introducing his Army estimates, recognised this.

It is devoutly to be hoped that whatever may be the shape of the future British Army, every endeavour will be made to preserve intact, to the greatest extent possible, the regimental traditions and individualities of units comprising it. We are, all of us, merely trustees of these traditions, which are sacred and immortal.

C. A. MILWARD,
Major-General.

14th July, 1944.

NIGHT FIGHTING AT SEA

To the Editor of the R.U.S.I. Journal.

SIR,—In his interesting article in the May number Admiral Sir William James says that Admiral Rodney's action in January, 1780, was the last action between principal fleets until the Battle of Matapan in March, 1941. There was, however, a remarkable sea battle on the night of 12th–13th July, 1801.

Rear-Admiral Sir James Saumarez sailed from Gibraltar at about 8 p.m. on the 12th with five sail of the line and a frigate, mounting in all 546 guns. He was deliberately seeking action with a greatly superior force consisting of a combined Franco-Spanish fleet of ten sail of the line and four frigates, mounting in all 962 guns, which had left Algeciras for Cadiz. In the course of the night action which followed, two Spanish ships, each of 112 guns, caught fire and blew up and the "San Antonio," 74, was captured. The British ship "Hannibal," which had run aground off Algeciras and fallen into the hands of the French in an action which he had fought off that place just a week before, was retaken.

Subsequently Earl St. Vincent moved a vote of thanks to Saumarez in the House of Lords. This was seconded by Vice-Admiral Viscount Nelson.

C. DE SAUMAREZ,
Brigadier-General.

15th July, 1944.

MINELAYING FROM AIRCRAFT

To the Editor of the R.U.S.I. Journal.

SIR,—In the JOURNAL for May, 1944, the article on "Minelaying from Aircraft" refers to the fact that the British airborne mine was "first designed to fit the torpedo stowage of naval aircraft," but there is no mention that naval aircraft were engaged in these operations.

It seems necessary therefore in the interests of historical accuracy and in justice to the air crews involved to record that naval aircraft, operating under Coastal Command, began minelaying early in 1940 almost concurrently with aircraft of Bomber Command. These operations were extended by naval aircraft to other theatres of war in the succeeding months.

These operations, undertaken by single-engined aircraft, operating off an enemy coast, often at the limit of their radius of action and requiring exact navigation, called for duty of a particularly arduous nature for the air crews taking part.

P. C. PATTEN THOMAS,
Commander R.N.

30*th June*, 1944.

THE POST-WAR ARMY AND ITS DRESS.

A CORRECTION

To the Editor of the R.U.S.I. Journal.

SIR,—May I correct an error which occurred in my article on "The Post-War Army and its Dress." In the last paragraph but one, "their long jackboots and backs in breeches" should of course read "their long jackboots and buckskin breeches."

The youthful Lieutenant Roberts would indeed have been astonished at the appearance of the Bombay Horse Artillery as described in the sentence as printed! No doubt my caligraphy was to blame for the misinterpretation.

RUSSELL V. STEELE,
Captain.

29th *June*, 1944.

GENERAL SERVICE NOTES

H.M. THE KING

The King visited Supreme Headquarters, Allied Expeditionary Force, on 6th June.

VISIT TO NORMANDY.—The King visited the beaches in Normandy on 16th June. (See also *Navy Notes.*)

VISIT TO ITALY.—At the end of July the King made a twelve day trip to Italy to visit the British, Dominion and Allied forces, travelling each way by air. In the course of a comprehensive tour the King inspected a parade of American, British, French, Polish and Greek naval and merchant service men at Naples; visited troops of the 5th and 8th Armies—American, British, Canadian, South African, New Zealand, Indians and Poles—in many different localities; and visited the R.A.F. and other air forces. His Majesty arrived back in England on 3rd August.

EMPIRE WAR EFFORT

The following is an extract from an article by the Diplomatic Correspondent of *The Times* published in the issue of that newspaper of 4th May :—

" Some figures may be given to show how fully the nations of the Commonwealth have devoted themselves to victory :—

" GREAT BRITAIN.—Out of a population of 47,750,000 nearly 23,000,000 are in the fighting Services, in direct war industry, or in other vital work—the exact proportions cannot be given.

" CANADA.—Out of 11,500,000 people, more than 1,100,000 are in war work outside the armed forces and over 750,000 are in the armed forces—a total of 1,850,000. About 475,000 are in the Army, 74,000 in the Navy, 44,500 in the Merchant Navy, and over 200,000 in the Royal Canadian Air Force. The British Commonwealth Air Training Plan, administered by the Canadian Government, has turned out over 86,000 air crew graduates.

" AUSTRALIA.—Population, 7,000,000. By December, 1943, 1,181,000 men—or about half the working male population—and 191,000 women were in direct war work, including the forces. About 870,000 have enlisted in the fighting forces.

" NEW ZEALAND.—Population, 1,600,000, including 95,000 Maoris. By the middle of 1943, 230,000, or about a third of the working population, were in essential industries. More than 189,000 men had been enrolled in the armed forces by September, 1943; a quarter of the whole male population.

" SOUTH AFRICA.—Population, 2,200,000 Europeans and 8,100,000 Africans, Cape Coloureds, Indians, and others. Out of the 570,000 European males between the ages of 20 and 60, roughly one man in three had volunteered for full-time duty. By June, 1943, the strength of the armed forces was about 169,000 European men and women volunteers and 100,000 volunteers from the non-European army services. Over 86,000 Europeans and 39,000 Africans had served outside the Union.

" INDIA.—The Indian Army, of volunteers, has grown from 170,000 men in 1939 to over 2,000,000 men by February, 1944. Nearly 30,000 men are in the Royal Indian Navy.

" To make even the statistical picture complete, figures should be added of the contributions from every colonial territory."

BRITISH AID TO RUSSIA

A detailed statement on the materials and munitions of war supplied to Russia by Great Britain and the Empire countries was circulated in the House of Commons on 10th May. It was published in full in *The Times* issue of 11th May.

In his statement in Parliament Mr. Churchill said :—

" Between October 1st, 1941, and March 31st, 1944, we have supplied to the Soviet Union 5,031 tanks, of which 1,223 were from Canada. We have supplied 6,778 aircraft, including 2,672 aircraft sent from the United States. These latter were sent on United States Lend-Lease to the Soviet Union as part of the British commitment, in exchange for a supply of British aircraft to United States Forces in the European theatre. We have also sent over £80,000,000 worth of raw materials, foodstuffs, machinery, industrial plant, medical supplies, and comforts. . . ."

SERVICE PAY

Certain alterations in Service pay and allowances were announced in Parliament on 11th July. These are in addition to the major alterations notified in the White Paper (Cmd. 6521), which was referred to on page 179 of the May number of this JOURNAL.

The main features in the new alterations are :—

(*i*) An increase both in the field of dependents eligible for an allowance and in the number of eligible dependents who will qualify for the higher rates of allowance, including the maximum rate of 25s. a week.

(*ii*) In respect of War Service Grants to families, a soldier will now be expected to contribute to the support of his family four-sevenths of the amount by which his pay exceeds 5s. 6d. a day, instead of 4s. 6d. The closer approximation of the schemes of qualifying allotment to a common pattern has enabled this 5s. 6d. point to be taken for War Service Grants purposes in the case of all three Services alike.

(*iii*) Women's rates of Ration Allowance have been brought up to the rates payable to men in corresponding circumstances.

(*iv*) Adjustments are made in the lodging and provision allowances to officers of the Women's Services.

(*v*) Rates of outfit allowance to officers on first appointment to a Commission are increased by £5. This increase of £5 applies also to the A.T.S. and W.A.A.F. officers; further consideration is being given to the position of W.R.N.S. officers in view of the special circumstances of that service.

(*vi*) Army officers will in future be allowed to retain paid acting or temporary rank for a maximum of four months when absent from duty on account of either wounds or sickness. The rules in the Navy and R.A.F. will be amended so as to ensure that officers of all three Services participate equally in this concession.

NAVY NOTES

GREAT BRITAIN

H.M. The King

It was announced on 14th May that the King had paid a visit to the Home Fleet to take leave of his captains and bid them and their ships' companies God-speed before battle. During four days, the King visited fourteen ships and inspected detachments from nearly every vessel present. As a compliment to the Fleet Air Arm, he put to sea in an aircraft-carrier and watched how a mimic " enemy " attack was replied to. He also took part on the bridge of a destroyer in a dummy U-boat hunt.

On 16th June, ten days after the Allied landing, the King went to Normandy, where he attended a conference at General Montgomery's Headquarters and decorated a number of officers and other ranks with awards gained mostly during the Mediterranean campaigns. The King crossed the Channel in the cruiser " Arethusa," Captain H. Dalrymple-Smith, R.N., escorted by the destroyers " Urania " and " Scourge." The passage was swept by the 16th Minesweeper Flotilla under Commander M. H. Brown, D.S.C., R.N., in the " Shippigan," and the 143rd Motor Minesweeping Flotilla under Lieutenant W. F. Watson, R.N.R., in M.M. No. 218.

On 3rd August, the King concluded a visit of twelve days to the Allied Forces in Italy. On his leaving, the following signal was made by Admiral Sir John Cunningham, Commander-in-Chief, Mediterranean :—

" His Majesty the King directs me to convey to all concerned his appreciation of the efficiency and appearance of the Allied ships and establishments and their companies which he saw in Italian waters."

The King ordered H.M. ships and establishments to splice the mainbrace.

Flag Appointments

Rosyth.—On 1st June, it was announced that the King had approved the appointment of Admiral Sir William J. Whitworth, K.C.B., D.S.O., to be Commander-in-Chief, Rosyth, in succession to Admiral Sir Wilbraham T. R. Ford, K.C.B., K.B.E.

Home Fleet.—On 15th June, it was announced that Vice-Admiral Sir Henry R. Moore, K.C.B., C.V.O., had been appointed Commander-in-Chief, Home Fleet, in succession to Admiral Sir Bruce A. Fraser, G.C.B., K.B.E. Vice-Admiral Sir Henry Moore has been granted the acting rank of Admiral while holding this appointment. He had been Second-in-Command of the Fleet since June, 1943, and was formerly Vice-Chief of the Naval Staff at the Admiralty.

Eastern Fleet.—It was announced on 1st August that the King had approved the appointment of Admiral Sir Bruce A. Fraser, G.C.B., K.B.E., as Commander-in-Chief, Eastern Fleet, in succession to Admiral Sir James F. Somerville, K.C.B., K.B.E., D.S.O. Admiral Somerville will take up another appointment in the near future.

Other Commands.—On 30th May, the Admiralty announced the following appointments :—

Rear-Admiral H. T. C. Walker to command of a cruiser squadron.
Rear-Admiral E. R. Archer to a shore appointment abroad.
Rear-Admiral L. H. Ashmore to a shore appointment at home.

Representative in Turkey.—It was announced from Ankara on 5th July that Admiral Sir Howard Kelly, who went there in 1940 as Personal Representative of the Commander-in-Chief, Mediterranean Fleet, had left for England on the completion of his mission in Turkey.

Re-instatement on Active List

Admiral Sir James F. Somerville, K.C.B., K.B.E., D.S.O., was re-instated on the Active List to date 10th August, 1944. He was placed on the Retired List just before the War on the grounds of health. How erroneous was this diagnosis has been proved by the success with which he has discharged his very responsible duties since he was given high commands afloat.

Promotions

Vice-Admiral Sir Henry D. Pridham-Wippell, K.C.B., C.V.O., is promoted to Admiral (30th June, 1944).

Rear-Admiral Denis W. Boyd, C.B., C.B.E., D.S.C., is promoted to Vice-Admiral (30th June, 1944).

Rear-Admiral Frederick H. G. Dalrymple-Hamilton is promoted to Vice-Admiral (15th June, 1944).

The following promotions to Rear-Admiral have been approved, to date 7th July, 1944 :—

Captain John W. Durnford, A.D.C.
Captain (Commodore 1st Class) Cyril E. Douglas-Pennant, C.B.E., D.S.C.
Captain Edward D. B. McCarthy, D.S.O., A.D.C.
Captain Benjamin C. S. Martin, C.B.E., D.S.O.

Rear-Admiral Martin, who is 53, is the first officer who started his career on the Lower Deck to reach Flag Rank on the Active List for 87 years. He was educated at the Royal Hospital School, Greenwich, and went to sea as Boy, 1st Class, in 1907. In May, 1915, he became a Warrant Officer, and after serving as a Gunner (T) in the "Malaya" at Jutland was promoted to Commissioned rank as Mate on 13th October, 1916, and to Lieutenant from 13th October, 1918. He became a Commander in June, 1931, and a Captain in June, 1935. In May, 1941, he was in command of the "Dorsetshire" when she made the final torpedo attack which sank the "Bismarck."

The following Captains (E) are promoted to Rear-Admiral (E) to date 15th April, 1944 :—

Brian L. G. Sebastian.
Bernard W. Greathed.

Honours and Awards

Order of the Bath

C.B.—On 24th May, it was announced that the King had approved of the appointment as C.B. of Captain (Commodore, First Class) Geoffrey N. Oliver, D.S.O., R.N., for distinguished service in the planning and successful execution of the initial landings at Salerno.

Order of the British Empire

C.B.E.—The following appointments were approved by the King on the dates indicated :—

Surgeon Captain J. A. Maxwell, C.V.O., O.B.E., R.N., for distinguished service as senior medical officer in H.M. hospital ship "Oxfordshire" in dangerous waters during operations in Sicily and off the Salerno beaches. (24th May, 1944.)

Rear-Admiral J. A. V. Morse, C.B., D.S.O., for outstanding leadership and organizing ability in charge of the clearance and reconstruction of the port of Naples. (7th June, 1944.)

Distinguished Service Order

The following was among several awards announced on 14th June for outstanding leadership, skill, and determination in H.M. ships "Starling," "Wild Goose," "Kite," "Woodpecker," and "Magpie" in the destruction of six U-boats in the course of operations covering the passage of convoys in the North Atlantic :—

Third Bar to D.S.O.—Captain F. J. Walker, C.B., D.S.O., R.N.

Captain Walker died in hospital on 9th July at the age of 48. He was a most outstanding commander of Escort Groups in the war on U-boats in the Atlantic. In January, 1942, the sloop "Stork," under his command, sank three U-boats in four days. His greatest achievements were, however, in command of the Second Escort Group, which had 17 kills to its credit up to March, 1944. In January it had sunk two U-boats in eight hours, and in March it destroyed six in one patrol which the First Lord described as "the greatest cruise, perhaps, ever undertaken in this war by an escort group," the operations extending over 20 days.

George Cross

It was announced on 21st June that the King had approved the award of the George Cross to :—

Lieutenant John Bridge, G.M., R.N.V.R. (Warrington), for great gallantry and undaunted devotion to duty.

Lieutenant Bridge, formerly a physics master at Firth Park Grammar School, Sheffield, has worked on bomb disposal since he joined the Navy.

Miscellaneous

On 20th June, at a congregation at Cambridge, the degree of M.A. *Honoris Causa* was conferred on Rear-Admiral H. C. Allen, Officer-in-Charge of the Cambridge Naval Centre.

BIRTHDAY HONOURS

The following were included in the honours conferred on the occasion of the official celebration of the King's Birthday on 8th June :—

K.C.B. (MILITARY).—Vice-Admiral Sir Harold Martin Burrough ; Vice-Admiral Henry Bernard Rawlings ; Vice-Admiral Louis Henry Keppel Hamilton.

C.B. (MILITARY).—Vice-Admiral E. de F. Renouf (Retired), Rear-Admiral R. J. R. Scott (Retired), Rear-Admiral Sir Philip Louis Vian, Rear-Admiral A. D. Read, Rear-Admiral H. C. Phillips, Rear-Admiral J. H. Edelsten, Engineer Rear-Admiral R. C. Hugill (Retired), Paymaster Captain R. E. Worthington.

K.B.E. (MILITARY).—Vice-Admiral Frank Arthur Marten (Retired), Vice-Admiral Theodore John Hallett (Retired), Rear-Admiral Aubrey Thomas Tillard (Retired), Rear-Admiral Kenelm Everard Lane Creighton (Retired).

D.B.E. (MILITARY).—Miss Doris Winifred Beale, R.R.C.

C.B.E. (MILITARY).—Rear-Admiral (E) C. H. Nicholson, Surgeon Rear-Admiral R. A. Rowlands, Captain (Commodore, Second Class) J. P. Champion, R.N. (Retired), Captain (Commodore, Second Class) D. de Pass, R.N. (Retired), Captain T. H. Back, R.N., Captain A. E. Buckland, R.N. (Retired), Captain D. W. O'B. Forsyth, R.N. (Retired), Captain A. E. Johnston, R.N. (Retired), Captain F. T. de M. Morgan, R.N. (Retired), Captain R. W. Ravenhill, R.N., Captain D. V. Peyton-Ward, R.N., Constructor Captain N. G. Holt, R.C.N.C., Paymaster Captain J. H. B. Benwell-Lejeune, R.N., Paymaster Captain C. A. Maurice-Jones, R.N., Major-General G. E. Wildman-Lushington, R.M., the Rev. R. R. Churchill, Chaplain, R.N., Miss J. M. Woollcombe, Superintendent, W.R.N.S.

PERSONNEL

TRIBUTE TO MINESWEEPERS.—A message congratulating all officers and men of H.M. Minesweeping Forces for their continued success in destroying enemy mines was conveyed in July by the First Lord of the Admiralty on behalf of the War Cabinet. The message states that the War Cabinet fully appreciates that, but for the courage, skill, and devotion of H.M. Minesweeping Forces, the success of the recent amphibious operations, and especially of the landings in Normandy, could not have been achieved.

PARACHUTE PAY.—By Order in Council of 22nd July, 1943, sanction was given to the payment of extra pay of 2s. a day to naval ratings during the period of their attachment to the Airborne Division, under the conditions governing its issue to army personnel of the Division. By a new Order in Council published in the *London Gazette* on 19th May, 1944, the payment of parachute pay is extended to all naval and Royal Marine personnel who may qualify for the payment, both officers and men.

VOLUNTEER YACHTSMEN.—On 25th May, the Admiralty stated that about 3,700 volunteers had responded to the appeal for yachtsmen and others experienced in the handling of boats to put their services at the disposal of the Royal Navy for short periods of duty under the yachtsmen's emergency scheme. A number were then already employed in home ports.

SEA CADET CORPS.—An Admiralty statement on 4th July points out that if pre-entry training is to be of any value for boys who intend to make their career at sea, they

must be enrolled at or soon after the age of 14. The Corps is to remain a separate entity under Admiralty control, but co-operating to the fullest extent with the other Services' pre-entry training corps and youth organizations. The age of service is to be between the ages of 14 and 17..

WOMEN'S ROYAL NAVAL SERVICE

BIRTHDAY HONOUR—C.B.E.—Miss J. M. Woollcombe, Deputy Director (Manning), W.R.N.S.

NEW APPOINTMENT.—Miss D. Isherwood has arrived in Algiers to take up her new appointment as Superintendent W.R.N.S. Mediterranean. She was the first Director of the W.R.C.N.S., having been lent to the Canadian Navy. On her return she served as Chief Officer-in-Charge, W.R.N.S., Orkney and Shetland.

ROYAL MARINES

APPOINTMENT.—It was announced from Combined Operations Headquarters on 12th May that Major-General Robert G. Sturges had been appointed to command the Special Service Group (Commandos), a formation of the Combined Operations Command.

PROMOTIONS.—Lieutenant-Colonel M. H. W. Webb-Bowen to Acting Colonel Second Commandant (25th May, 1944); Lieutenant-Colonel D. A. C. Shephard to Acting Colonel (14th May, 1944).

DOMINIONS AND COLONIES

AUSTRALIA

NEW CRUISER.—On 26th April, the Minister of the Navy, Mr. Makin, announced that the War Cabinet had sanctioned the construction of a cruiser costing approximately £4,500,000. She would be the largest warship ever to be built in Australia, and all the guns and armour plate would be manufactured in the Commonwealth. She would probably take five years to complete.

CANADA

NAVAL MISSION OVERSEAS.—On 21st May, Mr. Angus Macdonald, Minister of National Defence for Naval Services, announced that the offices of Senior Canadian Flag Officer (Overseas) and Senior Canadian Naval Officer (London) had been combined, and would be known as Canadian Naval Mission Overseas. Vice-Admiral P. W. Nelles, Senior Canadian Flag Officer, would be Head of the Mission, and Captain F. L. Houghton, formerly Senior Canadian Naval Officer, would be Deputy Head.

H.M.C.S. "ATHABASCAN" LOST.—On 29th April, the Canadian destroyers "Haida" and "Athabascan" encountered two enemy destroyers off Ushant and chased them. The "Athabascan" was torpedoed and sunk, but the "Haida" (Commander H. G. De Wolf, R.C.N.) drove one of the German ships ashore and rescued forty of the crew of the "Athabascan" (Lieutenant-Commander J. H. Stubbs, D.S.O., R.C.N.).

H.M.C.S. "VALLEYFIELD" LOST.—The loss was announced on 15th May of the Canadian frigate "Valleyfield" on escort duty in the North Atlantic. Among 121 missing was her captain, Lieutenant-Commander D. T. English, R.C.N.R. The "Valleyfield," commissioned last December, was the first Canadian frigate to be sunk. She was built at Quebec.

NORMANDY OPERATIONS.—On 14th June, Mr. Macdonald stated in the Dominion House of Commons that Canada was represented in the invasion operations by more than a hundred ships and 10,000 naval officers and men. Almost every type of fighting ship in the Canadian Navy was taking part.

NEW ZEALAND

Speaking in London on 5th May, during his visit for the Imperial Conference, Mr. Fraser, Prime Minister of New Zealand, said that in addition to supplying trained men for the Royal Navy, the New Zealand Navy had played a small but useful role in the war. He need only refer to the part played by the cruiser "Achilles" in the sinking of the "Graf Spee," and the fact that the first Japanese submarine to be beached and captured was the prey of a New Zealand corvette.

ARMY NOTES

H.M. The King

On 14th May the King took the Salute at a Parade of the Home Guard in Hyde Park which was held to mark the occasion of the fourth anniversary of its formation.

On 19th May the King, accompanied by the Queen and the Princess Elizabeth, visited airborne troops. The King visited other troops on 22nd May.

On 28th May the King took the Salute at a Parade organized in aid of the Windsor " Salute the Soldier " Week.

The King visited the beaches in Normandy on 16th June.

The King and Queen visited anti-aircraft gun sites in Southern England on 12th July.

The Queen inspected the 2nd Battalion, Bedfordshire Home Guard, on 23rd July. She visited the Army Comforts Depot at Reading on 26th July, and the A.T.S. Wing of the Staff College and Centres in the South-Eastern Command and the London District on 31st July.

The Princess Elizabeth (Colonel, Grenadier Guards) visited two battalions of the Regiment on 17th May.

The Duke of Gloucester concluded a visit to troops in the North of England on 13th July.

The Princess Royal (Colonel-in-Chief) visited a battalion of The Royal Scots on 23rd May, and The Royal Scots' Club in Edinburgh on 31st May. She visited units of the Royal Corps of Signals on 8th and 15th June.

The Princess Royal (Controller-Commandant) visited units of the Auxiliary Territorial Service in the Southern Command on 1st, 16th, 17th, 18th and 19th May; in the London District on 2nd May; in the Western Command on 8th May and 21st June; in the Anti-Aircraft Command on 22nd May, 3rd June and 25th July; in the South-Eastern Command on 24th May; in the East Scotland District on 31st May; in the Scottish Command on 1st and 2nd June; and in the Northern Command on 19th June, and 14th, 18th and 25th July. She was present at an A.T.S. Conference in London on 3rd May; attended an A.T.S. Parade Service in St. Giles' Cathedral, Edinburgh, on 4th June; and visited the A.T. Junior Officers' School in the South-Eastern Command on 8th June.

The King has approved the following appointments :—

To be Aide-de-Camp General to the King.—General A. G. O. M. Mayne, K.C.B., C.B.E., D.S.O. (7th July, 1944).

To be Aide-de-Camp to the King.—Colonel (temporary Major-General) R. H. Studdert, D.S.O., M.C. (13th April, 1944).

To be Colonels Commandant—of the Royal Artillery, Lieut.-General Sir Alan Cunningham, K.C.B., D.S.O., M.C. (17th May, 1944); of the Indian Electrical and Mechanical Engineers, Lieut.-General Sir Clarence A. Bird, K.C.I.E., C.B., D.S.O. (26th May, 1944).

To be Regimental Colonels—of the 4th Bombay Grenadiers, Indian Army, General Sir Claude J. E. Auchinleck, G.C.I.E., C.B., C.S.I., D.S.O., O.B.E., A.D.C. (26th May, 1944); of the Royal Bombay Sappers and Miners Group, Lieut.-General Sir Francis P. Nosworthy, K.C.B., D.S.O., M.C. (26th May, 1944).

Honours and Awards

Victoria Cross.—The King has approved the award of the Victoria Cross to—

(*a*) Captain (temporary Major) C. F. Hoey, M.C., The Lincolnshire Regiment (posthumous)—for outstanding gallantry and leadership in Arakan, Burma, in February, 1944.

(*b*) Major (temporary Lieut.-Colonel) H. R. B. Foote, D.S.O., Royal Tank Regiment, R.A.C.—for outstanding courage and leadership over a period of several days between 27th May and 15th June, 1942, in the Western Desert.

(*c*) Sepoy (acting Naik) Nand Singh, 11th Sikh Regiment, Indian Army—for outstanding dash, determination, courage and leadership in Burma on the night of 11th March, 1944.

(*d*) Lance-Corporal J. P. Harman, The Queen's Own Royal West Kent Regiment—for heroic action and supreme devotion to duty at Kohima on 8th April, 1944.

(*e*) Fusilier F. A. Jefferson, The Lancashire Fusiliers—for extreme gallantry in Italy on 16th May, 1944.

(*f*) Lieutenant (temporary Captain) R. Wakeford, The Hampshire Regiment—for selfless devotion to duty and outstanding courage and leadership near Cassino, Italy, on 13th May, 1944.

(*g*) Major J. K. Mahony, The Westminster Regiment (Motor), Canadian Army—for superb courage, determination and leadership in Italy on 24th May, 1944.

(*h*) Sepoy Kamal Ram, 8th Punjab Regiment, Indian Army—for sustained and outstanding bravery in Italy on 12th May, 1944.

(*i*) Jemadar Abdul Hafiz, 9th Jat Regiment, Indian Army (posthumous)—for inspiring leadership and outstanding bravery near Imphal on 6th April, 1944.

George Cross.—The King has approved the award of the George Cross in recognition of most conspicuous gallantry in the face of extreme danger to—

(*a*) Corporal (acting Sergeant) J. Rennie, Canadian Infantry Corps. (Posthumous.)

(*b*) Private J. H. Silk, The Somerset Light Infantry. (Posthumous.)

(*c*) Subadar Subramanian, I.D.S.M., Queen Victoria's Own Madras Sappers and Miners, Indian Engineers, Indian Army. (Posthumous.)

The following award, for gallant and distinguished services in Italy, was announced on 1st June :—

C.B.—Lieut.-General S. C. Kirkman, C.B.E., M.C.

The following awards were included in the King's Birthday Honours List announced on 8th June :—

G.C.B.—General Sir Henry Maitland Wilson, G.B.E., K.C.B., D.S.O., A.D.C. General.

K.C.B.—General A. G. O. M. Mayne, C.B., C.B.E., D.S.O., Indian Army ; Major-Generals (temporary Lieut.-Generals) E. C. A. Schreiber, C.B., D.S.O. ; J. A. H. Gammell, C.B., D.S.O., M.C., and J. G. des R. Swayne, C.B., C.B.E.

K.C.I.E.—Lieut.-Generals W. H. G. Baker, C.B., D.S.O., O.B.E., Indian Army, and T. J. Hutton, C.B., M.C.

K.B.E.—Major-General (temporary Lieut.-General) A. E. Nye, C.B., M.C. ; Major-Generals G. de C. Glover, C.B., D.S.O., M.C., and C. F. Liardet, C.B., D.S.O., T.D.

C.B.—Major-Generals A. E. Macrae, O.B.E. ; H. E. Roome, C.B.E., M.C. ; G. A. Blake, M.B., K.H.S. ; A. V. Hammond, D.S.O., Indian Army ; J. G. Bruce, D.S.O., M.C., Indian Army ; (local Lieut.-General) G. Wilson, C.B.E., M.C., M.B., K.H.S. ; Colonels (temporary Major-Generals) C. G. Phillips, D.S.O., M.C. ; C. A. West, D.S.O., M.C. ; K. N. Crawford, M.C. ; D. J. McMullen, C.B.E., D.S.O. ; J. A. C. Whitaker, C.B.E. ; P. H. Mitchiner, C.B.E., T.D., M.D., M.S., F.R.C.S., K.H.S. ; N. C. Brownjohn, O.B.E., M.C. ; R. C. Reynolds, O.B.E., M.C. ; C. A. P. Murison, C.B.E., M.C. ; R. F. S. Denning ; R. Richardson, M.C., Indian Army ; A. C. Curtis, D.S.O., M.C., Indian Army ; Colonel (temporary Brigadier) E. I. C. Jacob, C.B.E. ; Hon. Brigadier V. R. Kenny, M.B.E.

The following awards, for gallant and distinguished services in Italy, were announced on 16th June :—

K.C.B.—Lieut.-General (acting) A F. Harding, C.B.E , D S.O., M.C.

C.B.—Major-Generals (acting) T. S. Airey, C.B.E., and G. P. Walsh, C.B.E., D.S.O.

The following awards, for distinguished services in connection with the operations in Normandy, were announced on 29th June :—

K.C.B.—Lieut.-General (temporary) M. C. Dempsey, C.B., D.S.O., M.C.

K.B.E.—Major-General (acting) F. W. de Guingand, C.B., C.B.E., D.S.O.

C.B.—Major-General (acting) M. W. A. P. Graham, C.B.E., M.C.

Appointments

The following appointments have been announced :—

To be Director-General, Home Guard and Territorial Army.—Major-General Sir James S. Drew, K.B.E., C.B., D.S.O., M.C.

To be Deputy Adjutant-General.—Major-General Lord Bridgeman, C.B., D.S.O., M.C.

To be Directors of Medical Services, with acting rank of Major-General.—Colonels (temporary Brigadiers) E. A. Sutton, C.B.E., M.C., late R.A.M.C. (7th May, 1944), and J. C. A. Dowse, C.B.E., M.C., late R.A.M.C. (8th May, 1944).

Special Appointments in India.—Major-General (temporary Lieut.-General) J. G. des R. Swayne, C.B., C.B.E. (6th April, 1944) ; Colonel (temporary Brigadier) R. C. McCay, C.B.E., D.S.O., I.A., with acting rank of Major-General (6th March, 1944).

Promotions

The following promotions have been announced :—

Generals.—The following Lieut.-Generals, Indian Army, to be Generals, 1st April, 1944 :—H. Finnis, C.B., M.C. ; A. G. O. M. Mayne, C.B., C.B.E., D.S.O. ; Sir Hastings L. Ismay, K.C.B., D.S.O.

Lieut.-Generals.—To be Lieut.-General :—Major-General (acting Lieut.-General) Sir Richard N. O'Connor, K.C.B., D.S.O., M.C. (18th May, 1944, with seniority, 10th August, 1941).

To be temporary Lieut.-General :—Major-General (acting Lieut.-General) Sir Arthur F. Smith, K.B.E., C.B., D.S.O., M.C. (27th February, 1944).

To be temporary Lieut.-General and War Subs. Major-General :—Colonel (acting Lieut.-General) N. M. Ritchie, C.B.E., D.S.O., M.C. (3rd April, 1944).

To be acting Lieut.-General :—Major-General J. G. W. Clark, C.B., M.C. (25th January, 1944).

Major-Generals.—The following War Subs. Major-Generals (temporary Lieut.-Generals) to be Major-Generals :—M. C. Dempsey, C.B., D.S.O., M.C. (27th April, 1944) ; W. D. Morgan, C.B., D.S.O., M.C. (15th May, 1944, with seniority, 9th January, 1944) ; H. Lumsden, D.S.O., M.C. (17th May, 1944, with seniority, 23rd December, 1943) ; N. M. Ritchie, C.B., C.B.E., D.S.O., M.C. (18th May, 1944, with seniority, 25th December, 1943).

The following Colonel (acting Lieut.-General) to be Major-General :—F. A. M. Browning, C.B., D.S.O. (27th May, 1944, with seniority, 28th December, 1943).

The following Colonel (temporary Major-General) to be Major-General :—H. E. Roome, C.B.E., M.C. (8th May, 1944, with seniority, 25th September, 1941).

The following Colonels (acting Major-Generals) to be temporary Major-Generals :—C. B. Wainwright (14th April, 1944) ; A. C. Duff, O.B.E., M.C. (12th April, 1944) ; J. A. A. Griffin, D.S.O. (4th May, 1944) ; C. H. H. Vulliamy, D.S.O. (5th May, 1944) ;

P. S. Whitcombe, O.B.E.; J. T. W. Reeve, C.B.E., D.S.O.; T. W. Richardson, O.B.E. (all 14th May, 1944); D. A. H. Graham, C.B.E., D.S.O., M.C. (15th May, 1944); L. B. Nicholls, C.B.E. (28th March, 1944); A. B. Blaxland, O.B.E., I.A. (18th September, 1943); R. P. L. Ranking, C.B.E., M.C., I.A. (7th December, 1943); H. P. W. Hutson, D.S.O., O.B.E., M.C. (26th May, 1944); E. C. Beard, C.B.E., M.C. (1st June 1944); C. G. G. Nicholson, C.B.E., D.S.O., M.C. (2nd June, 1944); G. M. S. Bruce, O.B.E., M.C. (17th June, 1944); N. Clowes, C.B.E., D.S.O., M.C. (5th July, 1944).

The following War Subs. Lieut.-Colonels (acting Major-Generals) to be temporary Major-Generals and War Subs. Colonels :—A. W. Stott, F.R.C.P., R.A.M.C., and W. H. Ogilvie, M.D., F.R.C.S., R.A.M.C. (both 5th May, 1944); R. N. Gale, O.B.E., M.C. (7th May, 1944).

The following Colonels (temporary Brigadiers) to be acting Major-Generals :—R. F. H. Nalder, O.B.E. (14th March, 1944); N. V. Watson, O.B.E. (3rd April, 1944); F. W. H. Pratt, C.B.E., D.S.O., M.C. (4th April, 1944); N. A. Coxwell-Rogers, D.S.O., O.B.E. (23rd March, 1944); V. J. E. Westropp, C.B.E. (1st May, 1944); A. H. Hornby, C.B.E., M.C. (1st June, 1944).

To be acting Major-General :—Colonel J. M. Benoy, O.B.E. (19th March, 1944).

The following War Subs. Lieut.-Colonels (temporary Brigadiers) to be acting Major-Generals :—A. D. Ward, D.S.O., The King's Regiment (20th April, 1944); T. S. Airey, C.B.E., The Durham Light Infantry (8th June, 1944); S. Lamplugh, C.B.E., R.E. (19th June, 1944).

To be local Major-General :—War Subs. Lieut.-Colonel (temporary Brigadier) A. E. Cottam, O.B.E., M.C., The South Staffordshire Regiment (18th April, 1944).

General

Allied Casualties in Normandy.—Official figures of casualties among the Allied forces in Normandy from 6th June, when the assault was launched, to 20th July inclusive, are :—

British.—5,646 killed; 27,766 wounded; 6,182 missing. Total, 39,594.

Canadian.—919 killed; 4,354 wounded; 1,272 missing. Total, 6,545.

American.—11,156 killed; 52,710 wounded; 6,143 missing. Total, 70,009.

Casualties in Italy.—On 27th June it was officially announced that casualties sustained by the British armies in Italy, including Dominion and Indian troops, from our landing in Italy to the fall of Rome on 4th June, amounted to :—14,331 killed; 47,966 wounded; 10,825 missing. Total, 73,122.

Home Guard.—In commemoration of the fourth anniversary of the founding of the Home Guard, a detachment of the 2nd County of London Battalion provided the guard at Buckingham Palace on 13th May.

Tribute to Home Guard.—Lieutenant-General H. C. Loyd, Commanding London District, in a message to the Home Guard commanders in the London area towards the end of July, said : " Many tributes have been paid by the civil authorities in London to the Home Guard for the admirable work done in connection with incidents caused by flying bombs. Everywhere I go I hear nothing but praise for the keenness and efficiency shown by the Home Guard and for the ready way in which they have co-operated with the Civil Defence services. I wish to send to all members my own appreciation of the co-operative and keen spirit shown. The good name of the Home Guard in London has never stood higher in public esteem than it does to-day."

Army Cadet Force.—The first cadet battalion in the country, attached to the Manchester Regiment, was formed in 1884, followed in 1889 by the 1st Cadet Battalion, The Queen's—pioneers of military training for boys under Army age and of boys' clubs and camps. In spite of peace-time difficulties Cadet numbers when the present war broke out amounted to 43,000; they have now grown to 170,000 The Army Cadet Force is

now organized in every county of England, Scotland, Wales, and Northern Ireland. About 90,000 cadets held a week's camp last year. Since then the British National Cadet Association has been re-organized and has greatly enhanced its usefulness.

REGIMENTAL EXPLOITS.—Short accounts of the exploits of various units were published in *The Times* on the following dates :—

5th May and 19th July	The Gordon Highlanders.
12th May	The Royal Fusiliers and Royal Scots Fusiliers.
16th May	The Seaforth Highlanders and Royal Inniskilling Fusiliers.
19th May	The Devonshire Regiment.
29th May	The East Surrey Regiment and Duke of Cornwall's Light Infantry.
30th May	The Northamptonshire Regiment.
31st May	The Green Howards.
20th June	Coldstream Guards and Royal Warwickshire Regiment.
22nd June	Grenadier Guards.
6th and 15th July ...	Welsh Guards.
13th July	Coldstream Guards.
25th July	4th County of London Yeomanry, Seaforth Highlanders and King's Dragoon Guards.

THE WEST YORKSHIRE REGIMENT.—The City of York has conferred on The West Yorkshire Regiment the privilege of marching through the streets of the city on all ceremonial occasions with bayonets fixed, colours flying and bands playing.

THE GREEN HOWARDS.—The Freedom of Middlesborough was bestowed on The Green Howards on 13th May.

THE HAMPSHIRE REGIMENT.—The Winchester City Council, on 27th July, decided to confer on The Hampshire Regiment "the privilege, honour and distinction of marching through the streets of Winchester on all ceremonial occasions with colours flying, drums beating and bayonets fixed " in token of long and close association between Winchester and the Regiment, and in recognition of its gallantry and achievements in the present war.

CHEVRONS.—Some correspondence regarding chevrons appeared in *The Times* early in May. We quote here a letter that was published in *The Times* issue of 9th May :—

" Sir,—In reply to Mr. Hesketh Hubbard's letter, chevrons originated in the French Army by an order of April 16th, 1771. They were intended to show length of service, not the rank of the wearer. After eight years' service the soldier contracted a new engagement and received a worsted lace of the facing colour, to be worn on the left arm. Those who contracted a third engagement had two chevrons. From numerous illustrations it appears that the chevrons were of the true heraldic form. The idea was copied by certain British regiments from time to time, but in their case, as badges of rank for N.C.Os. The inspection report of the 10th Dragoons, 1777, has this note : ' The Sergeant-Major has two marks on his arms like those of French soldiers after 16 years' service.' The oil painting of a sergeant of that regiment in 1792, by Stubbs, shows two inverted chevrons on the right arm, but in the Standing Orders, 43rd Foot, 1795, ' all Lance-Corporals are to wear a distinction on the side of their right arm above the elbow, made of white worsted lace formed in the shape of the letter V reversed. Lance-Sergeants to have two of these marks.'

General Orders of July 14th, 1802 (Infantry), and May 24th, 1803 (Cavalry), regulated the wearing of chevrons by N.C.Os. ' with the points downwards, on the right arm, at an equal distance from the elbow to the shoulder.' This has remained the rule up to the present time, although in one regiment, the 87th, the sergeants certainly wore ' heraldic ' chevrons in 1860, and this regimental peculiarity is also shown in Hamilton Smith's plate dated 1813.

Yours, &c.;

St. Luke's Vicarage, Reading. PERCY SUMNER."

CIVILIAN AIR RAID CASUALTIES.—The following figures show civilian casualties due to air raids on the United Kingdom during 1944 :—

	Killed.	*Injured and detained in hospital.*	*Total.*
January	107	270	377
February	961	1,712	2,673
March	279	633	912
April	146	226	372
May	68	75	143
June	1,935	5,906	7,841

The " flying bomb " assault on London and southern England began on 13th June.

CANADA

APPOINTMENTS.—It was announced on 4th May that Major-General J. C. Murchie had been appointed Chief of the Canadian General Staff, with acting rank of Lieut.-General.

THE CANADIAN PRIME MINISTER, Mr. Mackenzie King, inspected troops and armour of the First Canadian Army somewhere in England on 17th May.

VICTORIA CROSS.—The Victoria Cross has been awarded to Major J. K. Mahony, The Westminster Regiment (Motor), Canadian Army (see page 301).

HONOURS.—The following awards to officers of the Canadian Army were included in the King's Birthday Honours List published on 8th June :—

C.B.—Major-Generals R. D. Alexander, D.S.O., and J. P. Mackenzie, D.S.O., E.D.

AUSTRALIA

WAR HISTORY.—It was announced in Australia on 1st April that the War Cabinet had approved plans for a 15-volume official history of Australia's part in the War, to be edited by Mr. Gavin Long. The Australian history of the War of 1914–1918, also in 15 volumes and edited by Dr. C. E. Bean, was completed in 1943.

SOUTH AFRICA

ARMOURED DIVISION.—It was announced in May that the South African 6th Armoured Division, under Major-General E. Poole, is in Italy.

HONOUR.—The following award was included in the King's Birthday Honours List published on 8th June :—

C.B.—Acting Major-General F. R. G. Hoare, South African Staff Corps.

INDIA

VICTORIA CROSS.—Of the nine latest awards of the Victoria Cross to soldiers of the British Empire (see page 300), it is worthy of notice that three have been bestowed on Indians of the Indian Army.

AIR NOTES

ROYAL AIR FORCE

H.M. The King

The King and Queen, with Princess Elizabeth, on 19th May visited airborne troops and saw one of the biggest glider landings ever made in Great Britain.

On 5th and 6th July, the King and Queen, with Princess Elizabeth, visited stations of the R.A.F. Bomber Command and of the 8th United States Army Air Force. On 7th July, the King and Queen visited the 2nd Tactical Air Force Headquarters, Allied Expeditionary Air Force.

On 14th July, the King and Queen visited R.A.F. Units of the 2nd Tactical Air Force. Pilots and air crews fighting in the Battle of France were decorated by the King at two open air investitures.

The King returned to England by air on 3rd August on the conclusion of a twelve days' visit to the Allied Forces in Italy.

Air Vice-Marshal A. F. Rook has been appointed an Honorary Physician to the King in succession to Group Captain G. S. Marshall, who vacated the appointment on retirement from the R.A.F. on 27th March.

The Rev. W. R. Marsh, R.A.F., has been appointed an Honorary Chaplain to the King (10th April, 1944), in succession to the Rev. M. H. Edwards, O.B.E., who relinquished the appointment on his retirement on that date.

Appointments

Central Flying School.—It was announced on 28th April that Air Commodore C. McC. Vincent, D.F.C., A.F.C., had been appointed Commandant of the Empire Central Flying School, in succession to Air Commodore G. S. Oddie, D.F.C., A.F.C., who played a notable part in the development of the School in its Empire status.

A.E.A.F. Headquarters.—It was announced on 6th June that Air Commodore S. C. Strafford, C.B.E., D.F.C., had been appointed Chief of Operations and Plans, Headquarters, Allied Expeditionary Air Force, and to be Air Vice-Marshal. He had been on planning duties at A.E.A.F. Headquarters since November, 1943.

India.—It was also announced on 6th June that Air Commodore O. E. Carter, A.F.C., had been appointed Director-General of Aircraft Supply, Government of India, and to be Air Vice-Marshal. He had been Chief Maintenance Officer at Headquarters, Air Command, South-East Asia.

Normandy.—It was announced on 22nd June that Air Vice-Marshal H. Broadhurst, D.S.O., D.F.C., A.F.C., was in command of a fighter group of the 2nd Tactical Air Force operating from advanced bases in Normandy. He was one of the first pilots to land in Normandy on D + 4 Day. He returned at once to complete the arrangements for transferring his headquarters, and within a few days was directing operations from French soil.

Commands and Staff.—The following appointments were announced on 30th June :—

Air Commodore Leonard Taylor to be Chief Maintenance Staff Officer, Headquarters, Middle East.

Air Commodore F. E. Vernon, O.B.E., to be Air Officer Commanding a Maintenance Group, Middle East Command.

Air Commodore F. J. Fressanges to be Air Officer Commanding a Transport Command Wing.

Air Commodore Philip Slocombe to be Deputy Chief Maintenance Officer, Headquarters, Mediterranean Allied Air Force.

Air Commodore K. B. B. Cross, C.B.E., D.S.O., D.F.C., to be Director of Overseas Operations at the Air Ministry.

A.E.A.F.—The following appointments were announced by Supreme Headquarters, Allied Expeditionary Force, on 11th July :—

Air Vice-Marshal H. E. P. Wigglesworth, C.B., C.B.E., D.S.C., to be Senior Air Staff Officer, Allied Expeditionary Air Force.

Air Vice-Marshal J. B. Cole-Hamilton, C.B., C.B.E.; Air Vice-Marshal L. O. Brown, D.S.C., A.F.C. ; Air Vice-Marshal B. E. Embry, D.S.O., A.F.C. ; and Air Vice-Marshal Harry Broadhurst, D.S.O., D.F.C., A.F.C., to be Group Commanders in the A.E.A.F.

STAFF AND COMMANDS.—The following appointments were announced on 19th July :—

Air Vice-Marshal G. B. A. Baker, C.B., C.B.E., M.C., to be Chief of Staff, Mediterranean Allied Air Force.

Air Commodore W. E. G. Bryant, M.B.E., to command the R.A.F. Station, Cranwell.

EXPERIMENTAL ESTABLISHMENT.—On 12th July, it was announced that Air Commodore J. N. Boothman, C.B., A.F.C., had been appointed to command the Aeroplane and Armament Experimental Establishment. He was formerly Air Officer Commanding the Photographic Reconnaissance Group of the R.A.F. Coastal Command.

PROMOTIONS

The following have been granted acting rank from the dates shown :—

As Air Marshal—Air Vice-Marshal Alan Lees, C.B., C.B.E., D.S.O., A.F.C. (8th April, 1944).

As Air Vice-Marshal—Air Commodores A. P. Davidson, C.B.E. (29th March, 1944) ; W. A. B. Bowen-Buscarlet, C.B.E., D.F.C. (26th March, 1944) ; R. O. Jones, C.B., A.F.C. (Technical Branch) (9th June, 1943) ; S. C. Strafford, C.B.E., D.F.C. (15th March, 1944) ; O. E. Carter, C.B.E., A.F.C. (Technical Branch) (18th May, 1944) ; R. A. George, C.B.E., M.C. (1st June, 1943).

PROMOTION.—Group Captain (temporary Air Commodore) J. Rylands, C.B.E. (Accountant Branch) to be Air Commodore (19th May, 1944).

RETIREMENTS

The following have been announced :—

Air Commodore R. W. Thomas, O.B.E. (13th April, 1944).

Group Captain (temporary Air Commodore) E. D. Johnson, A.F.C., retaining the rank of Air Commodore (21st April, 1944).

Group Captain (temporary Air Commodore) G. S. Oddie, D.F.C., A.F.C., retaining the rank of Air Commodore (26th April, 1944).

MEDICAL BRANCH.—Group Captain (temporary Air Commodore) R. H. Knowles (and re-employed) (2nd August, 1943).

HONOURS AND AWARDS

Victoria Cross

It was announced on 27th June that the King had approved the award of the Victoria Cross to :—

Pilot Officer Cyril Joe Barton, R.A.F.V.R., No. 578 Squadron (deceased).

On the night of 30th March, 1944, Pilot Officer Barton was captain and pilot of a Halifax aircraft detailed to attack Nuremberg. When some 70 miles short of the target, the aircraft was attacked by a Junkers 88. The first burst of fire from the enemy made the intercommunication system useless. One engine was damaged when a Messerschmitt 210 joined in the fight. The bomber's machine guns were out of action and the gunners

were unable to return the fire. Fighters continued to attack the aircraft as it approached the target area, and in the confusion caused by the failure of the communications system at the height of the battle a signal was misinterpreted and the navigator, air bomber and wireless operator left the aircraft by parachute. Pilot Officer Barton faced a situation of dire peril. His aircraft was damaged, his navigational team had gone and he could not communicate with the remainder of the crew. If he continued his mission, he would be at the mercy of hostile fighters when silhoutted against the fires in the target area, and if he survived he would have to make a 4½ hours journey home on three engines across heavily-defended territory. Determined to press home his attack at all costs, he flew on, and reaching the target released the bombs himself.

As Pilot Officer Barton turned for home the propeller of the damaged engine, which was vibrating badly, flew off. It was also discovered that two of the petrol tanks had suffered damage and were leaking. Pilot Officer Barton held to his course, and without navigational aids and in spite of strong head winds successfully avoided the most dangerous defence areas on his route. Eventually he crossed the English coast only 90 miles North of his base. By this time the petrol supply was nearly exhausted. Before a suitable landing place could be found, the port engines stopped. The aircraft was now too low to be abandoned successfully. Pilot Officer Barton therefore ordered the three remaining members of his crew to take up their crash stations. Then, with only one engine working, he made a gallant attempt to land clear of the houses over which he was flying. The aircraft finally crashed and Pilot Officer Barton lost his life, but his three comrades survived.

Pilot Officer Barton had previously taken part in four attacks on Berlin and fourteen other operational missions. On one of these, two members of his crew were wounded during a determined effort to locate the target, despite appalling weather conditions. In gallantly completing his last mission in the face of almost impossible odds, this officer displayed unsurpassed courage and devotion to duty.

Distinguished Service Order

The following were awarded a Second Bar to the D.S.O. on the dates shown :—

Wing Commander G. L. Cheshire, D.S.O., D.F.C., No. 617 Squadron (16th April, 1944).

Acting Wing Commander J. R. D. Braham, D.S.O., D.F.C. (13th June, 1944).

Acting Wing Commander J. E. Johnson, D.S.O., D.F.C. (4th July, 1944).

Birthday Honours

The following were included in the honours conferred on the occasion of the official celebration of the King's Birthday on 8th June :—

K.C.B. (*Military*).—Air Marshal Norman Howard Bottomley; Air Marshal Ralph Squire Sorley.

C.B. (*Military*).—Air Vice-Marshals R. Harrison ; E. W. Havers ; O. G. W. G. Lywood ; B. McEntegart ; R. B. Mansell ; A. P. M. Sanders ; D. C. T. Bennett ; W. C. C. Gell ; E. S. Goodwin ; V. E. Groom ; and S. P. Simpson. Air Commodores G. C. Bailey ; J. N. Boothman ; A. Gray ; H. M. Probyn ; G. R. Beamish ; and S. Cade.

C.B. (*Civil*).—Air Commodore (Hon.) V. S. Brown, Chief Inspector of Accidents, Air Ministry.

K.B.E. (*Military*).—Air Vice-Marshal William Tyrrell.

C.B.E. (*Military*).—Air Vice-Marshals R. M. Foster ; F. F. Inglis ; and C. E. V. Porter. Air Commodores T. G. Bowler ; O. E. Carter ; K. B. B. Cross ; H. G. Crowe ; T. Fawdry ; R. G. Hart ; A. MacGregor ; H. J. Roach ; C. A. Stevens ; F. N. Trinder ; T. A. Warne-Browne ; H. G. White ; C. D. C. Boyce ; H. A. Constantine ; L. Dalton-Morris ; J. S. Griffiths ; T. G. Pike ; and W. W. Straight. Group Captains M. C. Collins ;

A. E. Dark ; J. C. Foden ; T. P. Gleave ; D. McC. Gordon ; J. W. Jean ; J. Marsden ; T. G. Skeats ; E. F. Waring ; H. Dawes ; H. Eeles ; A. F. Johnson ; M. W. Nolan ; C. J. S. O'Malley ; W. E. V. Richards ; A. J. Richardson ; and F. J. Taylor.

Air Commodores H. F. De la Rue, R.A.A.F ; and J. L. Findlay, R.N.Z.A.F.

Women's Auxiliary Air Force

The fifth anniversary of the formation of the W.A.A.F. was observed on 28th June. Among the messages received by the Director, Air Commandant Lady Welsh, was one from the Queen, who said :—" To exacting work of infinite variety, often involving much personal sacrifice, officers and airwomen alike have made an unfailing contribution. Thereby they have earned the gratitude of their comrades in the Royal Air Force, who have learned to rely upon them, and the admiration of all who have had the good fortune, as I have, to become familiar with their high sense of duty and their cheerful efficiency."

The Duchess of Gloucester, Air Chief Commandant, in a message, said :—" I have seen you working side by side with the R.A.F. on airfields and balloon sites, in workshops, cook-houses, and in operation rooms, and have been filled with pride at the way in which you have shouldered your responsibilities. From all parts of the world I have heard of your splendid contribution to our successes in the War."

On 28th June, Air Marshal Sir Roderic Hill, Air Officer Commanding, Air Defence of Great Britain, told members of the W.A.A.F. of his command that they would shortly be going to the Continent to serve with the Allied Expeditionary Air Force.

Miscellaneous

Haile Selassie, Emperor of Ethiopia, has presented 300 oz. of gold to Sir Archibald Sinclair, Secretary of State for Air, as a tribute to the " gallant actions which are accomplished daily by the Royal Air Force against the common enemy." The gold has been entrusted to the R.A.F. Benevolent Fund.

Pre-war members of No. 605 (County of Warwick) Squadron of the Auxiliary Air Force recently entertained thirty members of the present squadron and four previous commanding officers and adjutants of this war to celebrate the destruction of 100 enemy aircraft. The squadron's total is now much higher, the century having been reached on 10th January, when the C.O., Wing Commander B. R. O'B. Hoare, D.S.O., D.F.C., destroyed a Ju.88 over Belgium.

The Old Warden estate of 7,000 acres in Bedfordshire has been presented and endowed as a college for training boys in aviation, agriculture and forestry by Mrs. D. C. Shuttleworth as a memorial to her son, Pilot Officer R. O. Shuttleworth, killed on active service in 1940. It will be known as the " Richard Ormonde Shuttleworth Remembrance Trust."

DOMINIONS AND COLONIES

AUSTRALIA

First Beaufighter.—The first Australian-built Beaufighter was handed over to the R.A.A.F. on 31st May, fourteen months after the plans for manufacture arrived from England. Beaufighters are now flowing from the assembly lines for duty with the R.A.A.F. embodying many changes to meet operational requirements in the Pacific.

Lancaster Command.—On 25th May it was announced that the youngest R.A.A.F. officer to command a bomber squadron, Wing Commander J. K. Douglas D.F.C., of New South Wales, had taken command of the senior Australian Lancaster squadron in Great Britain at the age of 22.

Award.—Among a number of awards approved by the King on 17th June, in recognition of conspicuous service in operations against the Japanese, was that of the C.B.E. to Air Commodore A. H. Cobby, D.S.O., D.F.C., G.M.

MUSEUM AIRCRAFT.—Three veteran aircraft operated by Australian squadrons in Britain have been prepared for despatch to Australia for the Commonwealth War Museum. They are the Spitfire flown by the late Squadron Leader Keith Truscott, D.F.C., who was associated with the late Wing Commander B. Finucane, D.S.O., D.F.C., in an R.A.A.F. fighter squadron; the Hampden "F for Freddie," previously flown by an Australian squadron; and a Lancaster, "G for George," which had been flown on 90 operations by 29 pilots and made its last operational journey on 20th April, 1944. The Lancaster was inspected by Mr. Curtin, the Australian Prime Minister, during his recent visit to England. Parts of a fourth aircraft, a Sunderland flying boat, P.9605, the first R.A.A.F. aircraft of any type flown on operations in Britain, have also been allocated for museum purposes.

CANADA

NEW COMMAND.—Mr. C. G. Power, Minister for Air, has announced the establishment of a new North-West Air Command in Canada, with headquarters at Edmonton, Alberta, under the command of Air Vice-Marshal T. A. Lawrence, formerly Air Officer Commanding No. 2 Training Command, Winnipeg. It will control and operate the North-West staging route—the chain of airfields stretching from Edmonton to the Yukon and Alaska. This route was formerly controlled by No. 2 Wing of the Western Air Command.

RECRUITING SUSPENDED.—It was announced in June that recruiting for the R.C.A.F. had been suspended until 1st October. The supply of fighter pilots, said Mr. C. G. Power, was in excess of requirements, and enabled the air authorities to reduce their demands on the country's man-power. Allied air casualties, especially in the early stages of the invasion of Europe, had been less than expected, and as a result of the accumulation in the reserve of pilots in Britain it was possible to extend the length of training courses in Canada by eight weeks, to enable more advanced training to be given.

ALLIED FORCES

UNITED STATES

B-29 SUPERFORTRESS (*see Frontispiece of this Journal*).—The following particulars of the biggest, fastest, and longest range bomber in use up to date have been published in *Flight*.

The wing span is 141 feet; an American report gives the length of the cylindrical fuselage as 98 feet.

The engines are Wright 18 cylinder radials, each developing 2,200 h.p., driving Hamilton-Standard four-bladed airscrews 16 ft. 6 in. diameter. These are reputed to give a speed of over 300 m.p.h., and the practical altitude is above 30,000 feet. Without hydraulic boost the flight controls are said to be lighter than earlier types.

The landing gear is "tricycle" and completely retractable. A major test of the first XB-29 was a free drop of 27 ins. Details of the armament and bomb load have not yet been released.

AWARD TO COLONEL ROOSEVELT.—On 24th May, Air Chief Marshal Sir Trafford Leigh-Mallory, Commander-in-Chief of the Allied Expeditionary Air Force, formally presented the insignia of a Commander of the Order of the British Empire to Colonel Elliott Roosevelt, second son of the President of the United States. The citation read as follows:—

> "Through the North-West African campaign, this officer displayed fine leadership and in operations set a high standard by his inspiring personal example. His unit, the Combined Photographic Reconnaissance Wing, played a vital part in the success of the African campaign, in that it was able to provide the necessary photographic intelligence on which to plan the air operations which led to the conquest of Sicily and the advance of the Allies towards Rome. The fact that his wing was able to do this was largely due to the energy and devotion to duty of Colonel Roosevelt."

Major-General Hoyt S. Vandenburg, Deputy C.-in-C. of the Allied Expeditionary Air Force, was among the staff officers at the presentation.

REVIEWS OF BOOKS

GENERAL

The War: Fourth Year. By Edgar McInnis. (Oxford University Press.) 10s. 6d.

This fourth volume of Professor McInnis' history of the War covers the period from October, 1942, to September, 1943, and is well up to the high standard of its predecessors. Lord Wavell contributes an interesting introduction. As a contemporary war history this book is in the first rank.

Military Operations in the Netherlands from 10th—17th May, 1940. By Lieut.-Colonel P. L. G. Doorman, O.B.E. Translated from the Dutch by S. L. Salzedo. (George Allen and Unwin, Ltd.) 5s.

The author of this brief, concise, yet detailed story of the swift German conquest of Holland is an officer of the Dutch General Staff. The book is published for the Netherlands Government Information Bureau and is based on material and data in the possession of the Netherlands Department of War in London. It is admittedly an interim account. As the writer says: "The moment has not yet arrived when a complete picture can be given of the events which occurred in Holland during the 'Five Days Campaign.' The data which would be required for that purpose, both from Dutch and from German sources, are not available." Nevertheless, this short military survey is of considerable interest.

The main impression one gathers is that of the impotence of a small, peace-loving and ill-armed country, however "neutral," against the aggression of a powerful and totally unscrupulous neighbour. Especially to be noted is the effect of overwhelming supremacy in the air in forcing a quick decision.

NAVAL

Brassey's Naval Annual, 1944. Edited by Rear-Admiral H. G. Thursfield. (William Clowes, London.) 30s.

This always welcome Annual, in its fifty-fifth year of publication, well maintains in the quality what is necessarily lacking in the quantity of its contents.

It opens with a long chapter, which is a useful synopsis of naval events during 1944, compiled by the Editor. The usual survey of Foreign Navies which follows is always a valuable feature. Then come a number of articles covering a variety of subjects of maritime interest.

Sir Archibald Hurd, in dealing with "The Future of Sea and Air Transport," gives a useful summary of the views expressed by the General Council of British Shipping in a report on that subject published last year. In the opinion of that Council "the aeroplane will never oust the ship, but it may well have a profound effect on the speed and character of seaborne services." This chapter also deals with the questions of nationalisation of shipping and air line subsidies. It is particularly worth reading at the present time.

Chapters on "The Air War at Sea" and "The U-Boat War" are followed by one of topical interest on "The Development of Landing Craft." Mr. McWhinnie, who has written it, devotes most of his available space to describing the landing craft used in this war. The subject is a fascinating one, and it is to be hoped that the JOURNAL will some day provide us with more of the history and development of this most vital feature in combined operations.

Amongst other interesting articles is one by the late Mr. Owen Rutter, giving an illuminating account of the development of that Cinderella of the Navy—the Fleet Air

Arm—during the past year. One feels that it has done magnificently in spite of having had to contend with a legacy of inadequate equipment and starvation of staff, both of which have yet to be completely made good. By the death of Mr. Rutter the Country loses a valuable contributor to its maritime literature.

A review article on a book dealing with Naval Strategy seems a little incongruous. The book is avowedly for the layman, and professional readers will not all be in agreement with some of Captain Russell Grenfell's comments on it—especially those relating to that threadbare controversy on the deployment at the battle of Jutland.

A chatty contribution on " The Press and the Navy," relating some of Mr. Gordon Holman's personal experiences as a journalist afloat, leavens the more weighty side of the Annual.

To wind up with, there is a timely article to show that even in this super-mechanical age it is the man that counts, written in his usual lively and graphic style by Admiral Sir William James.

The other half of the volume is composed of the usual tables of details of the world's navies, and silhouettes and diagrams of warships which combine with the first half to make this an invaluable addition to the many years of Brassey.

MILITARY

The Story of the Gun. By Lieutenant A. W. Wilson, R.A. (Royal Artillery Institution, Woolwich.) 2s. 6d.

This is an attractive booklet which may be commended to all soldiers (and many others) and not merely to members of the Royal Regiment of Artillery.

The author says in his introduction : " This book, based on lectures given to gunner officer cadets during their initial training, does not deal with the scientific and technical side of gunnery, but is intended to fill the need of those who wish to know something of the historical and romantic development of guns."

The writer's intention is well fulfilled. The narrative is most readable, and the numerous drawings and sketches illustrate the text admirably. Readers of this little history who may wish to see the early developments of artillery, which it describes, in the form of models, will find them in the Institution's Museum.

AIR

The Royal Air Force in the World War. Vol. II (May, 1940—May, 1941). By Captain Norman Macmillan, M.C., A.F.C. (Harrap.) 12s. 6d.

The second volume of Captain Macmillan's history maintains and, indeed, improves upon, the high standard set in the first. That, no doubt, is because he has here a braver tale to tell. The new volume, after describing the air operations on the Continent, including those over Dunkirk in May–June, 1940, tells once again the deathless story of the Battle of Britain. It is not a new story, but it will be retold many a time. It is well retold here.

Captain Macmillan rightly regards the Battle of Britain as embracing not only Fighter Command's defeat of the *Luftwaffe* over the Channel and Great Britain, but also Bomber Command's offensive, which began on 11th May against objectives in Germany and, from a later date, against the " invasion ports " ; nor can one exclude from it the assault on London which began on 7th September and was extended before long to the provincial centres of population. The Battle, he points out, had in any event a ragged opening and ending. When exactly it began and closed cannot be determined. " The day Battle of Britain was as it were an unfinished symphony ending in the third adagio movement. The night Battle of Britain continued to its allotted allegro movement in May, 1941, when the music of the German night bomber switched from its symphony over Britain to its fantastic Russian concerto."

We were fortunate, Captain Macmillan holds, in that the attack began only when it did. Our Metropolitan Air Force, Sir Archibald Sinclair stated at Swansea on 22nd August, 1942, was outnumbered four to one in September, 1939. The position was not very greatly better when the " phoney war " came to an end eight months later, but we had had those months at least to get our war industries into higher gear. If the War itself had been begun at the time of Munich, in 1938, our fate would have been much worse. " Then, indeed, the war might have been won by Germany within a year, so far as the Western Powers were concerned." The Battle of Britain might, probably would, have been won by the Germans if they had opened it either then or in September, 1939, and they would have had a good chance of winning it if they had not waited after Dunkirk. By August, 1940, the time for success had passed. " David had enough stones for his sling, Goliath not enough strength in his body."

Captain Macmillan tells graphically the story of many gallant feats of arms. For example, there are the stories of that desperate raid by the six Battles of No. 12 Squadron on the Albert Canal bridges on 12th May, 1940; of the five Hampdens' attack on the Dortmund-Ems canal on the night of 12th August; of J. B. Nicolson's berserk pursuit of the German pilot who had had the audacity to set his Hurricane on fire; of John Hannah's fight with the flames on 15th September. Each is told simply and without adornment, yet each is all the more impressive for the austerity of the telling.

A number of useful appendices complete the book. The most interesting is perhaps the list of " British Air Aces of Fighter Command gazetted up to 31st January, 1941." At its head stands the name of E. S. Lock, with twenty-two victories at least. A. G. Malan comes only ninth in order, with eighteen victories; he has doubled his score since then and would now stand first. Others, too, have added to their records. The moderation of the claims made for the men who smashed the German air invaders in 1940 is in striking contrast with the absurd exaggeration of the German pilots' claims—over two hundred victories in some pilots' cases.

ADDITIONS TO THE LIBRARY

GENERAL

China and Japan. By Sir J. T. Pratt. Pamphlet. (The Historical Association.) 1s. Presented.

The Sixteenth Quarter, July 1st–Sept. 30th, 1943. A Record of the War. By P. P. Graves. 8vo. (Hutchinson & Co.) 9s. 6d.

German Strategy of the World Conquest. By D. Whittlesey. 8vo. (F. E. Robinson & Co.) 12s. 6d.

Behind the Steel Wall. By A. Fredborg. (G. G. Harrap & Co.) 10s. 6d.

Practical Astronomy for the Forces. By R. D. Lester. (Hutchinson.) 2s. 6d. Presented.

Airborne Invasion. By J. Hetherington. (G. Allen & Unwin.) 7s. 6d.

The War—Fourth Year. By E. McInnes. (Oxford University Press.) 10s. 6d. Presented.

NAVAL

The Voyage of Sir Henry Middleton to the Moluccas, 1604–06. Edited by W. Foster. (Hakluyt Society.) Annual Subscriber.

Brassey's Naval Annual for 1943. Edited by Rear-Admiral H. G. Thursfield. (William Clowes & Sons.) 30s. Presented.

MILITARY

Modern Reconnaissance Compiled. (Military Service Publishing Co., Harrisburg, Pa.) $1.50. Presented.

The Story of the Gun. By A. W. Wilson. (R.A. Institution, Woolwich.) 2s. 6d. Presented.

Military Operations in the Netherlands from 10th–17th May, 1940. By P. L. G. Doorman. (G. Allen & Unwin.) 5s. Presented.

The Russian Army. By W. Kerr. (V. Gollancz.) 7s. 6d.

The German Army. By Herbert Rosinski. (Infantry Journal, Washington.) $3. Presented.

AIR

The Royal Air Force in the World War, May, 1940–May, 1941. By N. MacMillan. 2nd Vol. (G. G. Harrap & Co.) 12s. 6d. Presented.

Rise and Fall of the Luftwaffe. By H. Hermann. (John Long.) 12s. 6d.

From an Official Photograph

A TASK FORCE OF THE U.S. FLEET
ANCHORED IN FORMER JAPANESE WATERS